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the windward side, the other being open. They have little areas before the most of them, which are generally planted round with trees, or shrubs of ornament, whose fragrancy perfumes the very air in which they breathe.

Again, in 1777, Cook (19, vol. 1, p. 314) describes Tongatabu, as he saw it on "an excursion into the country," in the following words:

We found by far the greatest part of the country cultivated, and planted with various sorts of productions; and most of these plantations were fenced around. Some spots, where plantations had been formerly, now produced nothing, lying fallow; and there were places that had never been touched, but lay in a state of nature; and, yet, even those were useful, in affording them timber, as they were generally covered with trees. We met with several large uninhabited houses, which, we were told, belonged to the king. There were many public and well-beaten roads, and abundance of foot-paths leading to every part of the island.

The nearest approach to a village, observed by Cook was the capital Mua (the modern villages of Lapaha and Tatakamotonga), where the principal chiefs of Tongatabu dwelt, especially when attending the court of the Tui Tonga.

A map of Tongatabu Island, published in 1810 by Vason (60), although doubtless inaccurate as to details, shows the great road traversing the length of Tongatabu and the numerous lanes separating the farms.

La Perouse (47, vol. 2, pp. 171, 172) describes the south coast of Tongatabu as follows:

As the wind was to the north, I steered towards the south coast of the island, which is very free from danger, and may be approached within three musket-shots. The sea broke furiously all along the coast; but the breakers were upon the shore; and beyond them we perceived the most luxuriant orchards. All the island appeared to be cultivated; the fields, which were beautifully green, were bordered with trees. . . . The huts of the islanders were not collected together in villages, but dispersed over the fields, like the farm-houses in our best cultivated plains.

In 1793 conditions seemed to be unchanged, for Labillardière (37, vol. 2, pp. 135, 136, 153) says:

In advancing to the westward, we went over a vast enclosure formed by palisades, the stakes of which, placed obliquely, were pretty close to each other, and in the middle of which grew the bread-fruit tree, the plantain-tree, the fan palm, *corypha umbraculifera*, &c. Farther on, we found, within a fence not near so extensive, a small hut, of a conical form, in which we learnt were deposited the remains of a chief lately dead; and we were also informed that it was forbidden to enter it.

We then walked, for near a quarter of an hour, along a narrow road lined with palisades on both sides: we followed it as far as a very large lawn, where King Toobou was shortly to make his appearance. . . .

We soon after entered the fields, where we saw each individual's ground divided into small plots, surrounded by palisades, and in a high state of cultivation.

The missionaries who took up their residence in 1797 speak of certain places as the residences of chiefs—for example, Haateiho and Mua (spelled

Veamatahau, Vea, from Matahau. T,H,V
 Veaniua, Vea from Niuatoputapu. T
 Veatama, the child who is a chief.
 Veatokelau, the chief from the north,
 Vea of the north.
 Veatoki, a strong chief.
 Veatonga, Vea from the south.
 Veatoutai, Vea the chief of fishermen. T
 Veatupu, Vea the strong; a chief that is
 distinguished. T,H,V
 Veehala, the side of the road; not in
 step; to step wrong (as in a dance).
 T,V
 Veekalifisi, the feet of the wooden pil-
 low from Fiji.
 Veetokelau, the feet that come from the
 north; foot of the north.
 Veetutu, the feet that beat time in the
 dance. H
 Vehikite, something that appears in
 sight. T,V,NT
 Veikune, a good chief. T,H,V
 Vela, hot; to burn; to scald. NT
 Velevelu, the good that comes quickly.
 Velia, itchy.
 Velovelo, throw the dart (it was the
 cry of the warriors when fighting). T
 Vesi, verse. T
 Vete, to seize the spoil of a conquered

foe; to disburden; the name of a fish. 551
 T
 Vetule, to jog along, as one old or weak.
 H
 Veua, two things.
 Vi, the name of a tree and its fruit. T,
 H,V,NT,NF
 Viau, something of mine. H,NF
 Vika, Victoria. H
 Vikaheilala, Victoria of the *heilala* tree.
 Vikatoa, a whole *vi* fruit; all the *vi* fruit.
 V
 Vikena, the *vi* fruit that is reddish when
 ripe. T,H
 Vilai, a bean. T
 Vili, a gimlet; to drill; to go quickly. T
 Viliani, William. T
 Vilingia, to be blown away; to be blown.
 H
 Vivi, the name of a grass; dead; stink-
 ing. V,NT
 Vivili, to feel; to be conscious of. NT
 Vola, a fast dye. H
 Vuki, something at a distance. H,V
 Vulase (a Fijian word).
 Vuna, a real chief. T
 Vunaila, a chief with a scar.
 Vungakoto, the step upon which the
 mast of the vessel stands. V

THE OUTLYING ISLANDS

Although little was added to the previous knowledge concerning the 128 expansion of the Tongans beyond the limits of the modern kingdom of Tonga, some light was obtained as to the peopling of some of the remoter islands of the Tongan Archipelago proper. The islands I refer to in par- [103] ticular, named from north to south, are Fonualei, Toku, Late, Kao, and Ata or Pylstaarts. The first is now a hopeless wreck due to volcanic activity. 133 Toku, Late, Kao, and Ata are no longer inhabited. Late and Kao are high [162] volcanic islands. Ata is high and presumably volcanic. Toku is low and according to Tongan informants coralline. Most of my information con- 128 cerns Ata. Before taking up that island I shall first discuss the brief data concerning the others. As will appear, these outlying islands some- [727] times served as havens for the politically disfavored. (See Harangue about [166] Mumui, p. 156, in which the poet exclaims, "Exile me to Toku Island.")

Toku and Fonualei were held by a single group of people. Toku seems 162 to have been the residence center and Fonualei the farming center, the 311 Toku people utilizing Fonualei for gardens, perhaps because of the volcanic

[Tofua, Late, and Ata Islands]

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Early voyagers speak of Tofua as inhabited. An old woman, living on 162
Kotu Island in 1920, was the last inhabitant of Tofua. She was removed 888
by force by her relatives, who feared she was becoming too old to care for 602
herself and that the dogs might eat her if she became disabled. 825

Late Island, a volcanic cone lying west of the coralline Vavau group, 162
was formerly inhabited. The Late people and their descendants now live 133
on Hunga Island in the Vavau group. Late served at times as a place of 166
refuge for political exiles. Fukofuka, a Vavau chief, who incurred the dis- 727
favor of a great Vavau chief, presumably Ulukalala, fled there and sought
in vain to oppose the troops sent for him.

The people of Late seem to have had a quarrel of long standing with 628
the people of Moungaone Island, in Haapai, for each group seems to have
attacked the other at times. The fortress of Amaka on Late was built for 712
refuge against Moungaone raids. The chief of Late bore the title of Toto- 622
late. There is one at present. He was appointed by the Tui Kanokupolu.

ATA ISLAND

My data as to the settling of outlying islands are by far the fullest 131
for Ata Island, lying about ninety miles south of Tongatabu and in latitude
22° 20', almost at the tropic of Capricorn. Like Toku, Ata was a haven of 166
safety for the certain political refugees. 727

Ata was discovered and named Pylstaarts by Tasman in January, 1643, 177
while he was voyaging northward from New Zealand to Tonga. No mention 175
is made of signs of inhabitants and presumably it was not then occupied. 162
Tongan tradition makes the peopling somewhat later. 173

By 1791 Ata was inhabited. Thomson (21), discussing the voyage 175
of Captain Edwards in H. M. S. *Pandora*, says: "Running southward, he 162
made Pylstaarts, at that time inhabited by Tongan castaways, and the fact that
he did not stop to examine it, although he saw by the smoke that it was in-
habited. . . ."

In the Voyage of the Duff (65, 66), Ata is mentioned as uninhab-
ited, which would seem to be a mistake since it was already occupied in
1791. Speaking of the Spanish discoverer Fran. Ant. Maurelle who passed
in March, 1781, the Voyage of the Duff says: "He also saw the high unin- 131
habited spot, discovered and named Pylstaarts island by Tasman; in latitude
22° 22', 175° 59' west longitude. This he called La Sola."

West (62, p. 271) relates the following story about the peopling of 166
Ata: 173

. . . strange tales are told of one of their chiefs, called Uhila, whose cannibal pro- 266
pensities had been intensified by a long residence in Fiji. This chief resided at Nomuka;
but he was in the habit of making sudden descents upon different islands, for the pur-
pose of clubbing and kidnapping any of the inhabitants he could lay hold of, with whose

[Ata Island]

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bodies he returned to Nomuka, where he performed his inhuman orgies in a cave, which is said to be still full of the bones of his many victims. The peopling of the distant island, called Pylstaarts, about ninety miles to the south of Tongatabu, is attributed to this cause. In the depth of a dark and stormy night, Uhila effected a landing upon the island of Atata, one of the Tonga group. To escape his murderous attack, a party of the inhabitants hastily manned a *amatefua*, or single-sailing canoe, which happened to be moored on the lee side of the island. Hoisting the sail, they bore away, intending to make for the adjacent coast of Tongatabu. This, however, they were unable to do, owing to the darkness and the increasing storm. They were carried they knew not whither. They seemed only to have escaped one kind of death to meet with another. But the wind and sea carried them straight upon *Ata*, the Pylstaarts Island of the charts, where the little company grew into a Tonguese colony, which has, in recent years, claimed kindred with Tonga, and has received, in return, the blessing of the Gospel.

What follows concerning *Ata* has been derived entirely from modern Tongans, mostly former inhabitants of that island now residing in Eua Island, and also from Leha, the carpenter for Pangia, the last Tui Tonga's descendant.

The Tongan name is really 'Ata, which means reflection. *Ata* is the title of a great chief, which means dawn. Another name is *Atā*, which is the name of the island close to Tongatabu. This name means more room, expanding, and evidently has reference to the mythical origin of this island, which is believed to have arisen spontaneously from the depths of the sea and to be the first island of the Tongan archipelago to appear above the face of the waters.

Ata is a very steep, volcanic island. The anchorage is on the west side of the island and from the beach a trail leads upward. There was but one town on *Ata* and it was called Kolomaile, literally Myrtle town. It was divided into three sections: Hihifo (the west end), Auloto, and Pea. Pea was apparently named after the village of Pea in Tongatabu. The reason for so believing will appear later when I recount the story of the visit from the god of Pea to *Ata*. The people of *Ata* did not live on their farms as did Tongans elsewhere but lived together in the town. Each of these three divisions of the town had a district of its own for farming. Whether or not each district was divided into individual family holdings could not be determined.

The traditional discovery of *Ata* is attributed to the diviner Hama (16, p. 52). Apparently some time later the island was visited by a man named Motuapuaka, who eloped to *Ata* with the Tui Tonga's daughter named Tapuosi. Motuapuaka is said to have earlier sighted the island while fishing for bonito, so when he eloped with Tapuosi he headed for the island as a likely place of refuge from the wrath of the Tui Tonga. According to two informants from *Ata* there were already aborigines upon the island when Motuapuaka and Tapuosi arrived. The details of their adventures upon arriving at *Ata* were related by Tupouata, a descendant of the principal chief of the island, the Tui *Ata*. According to one informant there

[*Niuatoputapu Island*]

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accorded its inhabitants by the Tui Tonga Kauulufonua I, that they should push away the boats of the Tongans, and not let them land. In Nukualofa, at the time of my sojourn there, resided Maatu, the hereditary ruler of Niuatoputapu and virtually king thereof. An opportunity was therefore afforded of obtaining some information concerning that group.

Niuatoputapu was discovered on May 10, 1616, by the Dutch explorers Schouten and Lemaire. It thus constitutes the earliest discovered portion of the Tongan Archipelago. Basil Thomson (54, pp. 398, 399) gives an account of the visit of Schouten and Lemaire. Wallis visited Niuatoputapu on August 13, 1767. Nails, which he left there, were later found in the possession of the Tui Tonga Pau by Captain Cook a few years later.

Niuatoputapu group comprises two islands, Niuatoputapu or Keppel which rises to an altitude of 350 feet, and the volcanic cone of Tafahi or Boscawen which is two thousand feet high. These islands are located in latitude 16° south.

The Maatu whom I interviewed claimed to be the tenth ruler of the line, the first ruler bearing the title of Latu, the title which Schouten and Lemaire give for the ruler of Niuatoputapu. The following is the king list as given by the Maatu of 1921.

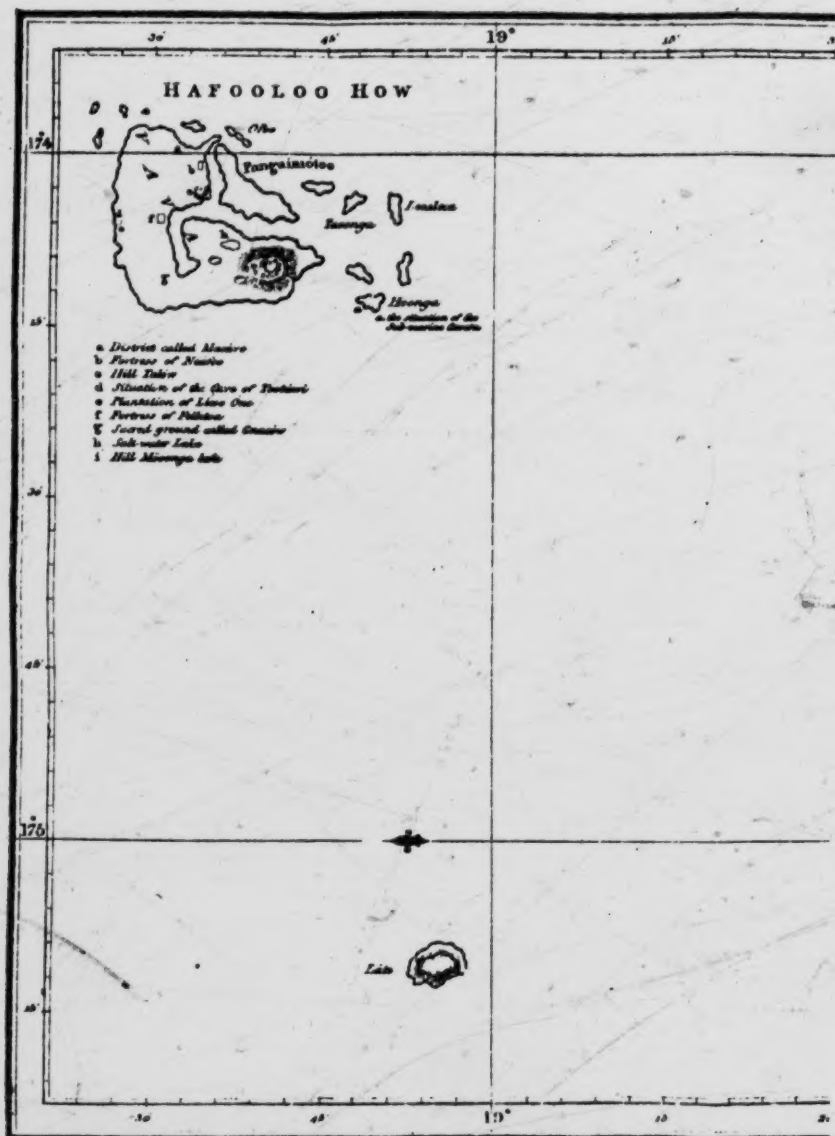
1. Latumailangi (chief from heaven) or Puakatefisi (pig from Fisi, a place on Tafahi Island). Pigs seem to be especially associated with Tafahi Island from which Puakatefisi came, for the people of the neighboring Niuatoputapu say of Tafahi, when the clouds are around its summit, that the gods must be cooking pigs, for there is the smoke.

2. Puakailakelo, son of 1. His name means "pig with yellow spots." It was he who is said to have changed the title from Latu to Maatu. The traditional reason for the change is as follows: Lavelua, the ruler of Uvea, came on a visit to Niuatoputapu, bringing with him his shell fishhook. In the dialect of Niuatoputapu such a fish hook is called *pa*. In the Uvean dialect it was called *utumaatu*. Latu fancied the name of the fish hook so the two kings traded fish-hook names. In Uvea such a fish hook was henceforth to be called *pa* and in Niuatoputapu it was to be called *utumaatu*. The ruler of the latter island then adopted the title of Maatu for himself and successors, discarding the older term Latu. In Uvea the old term *utumaatu* for fish hook became *tapu*. The Tamaha's genealogies have the following to say about Puakailakelo and his brother Pungakaitafola:

There were two brothers, Pungakaitafola and Puakailakelo. Pungakaitafola was Maatu, but on account of his sickness (nose trouble) he allowed his younger brother Puakailakelo to take the title, and he became Maatu.

A boat arrived from Niuafouu with two women, who were passengers, by name of Hekuau and Siulolovao; the latter was the child of Valamotu (daughter of Fusitua and Fotoili Alofi). Puakailakelo courted Hekuau, but she refused him as she had already a sweetheart at Niuafouu (Mailelatamai), and Siulolovao then accepted the courtship of Puakailakelo. Before Siulolovao had any children she adopted a little girl named Fataimoamanu as her first child to Puakailakelo. Fataimoamanu was the daughter of Alokuoulu the brother of Siulolovao.

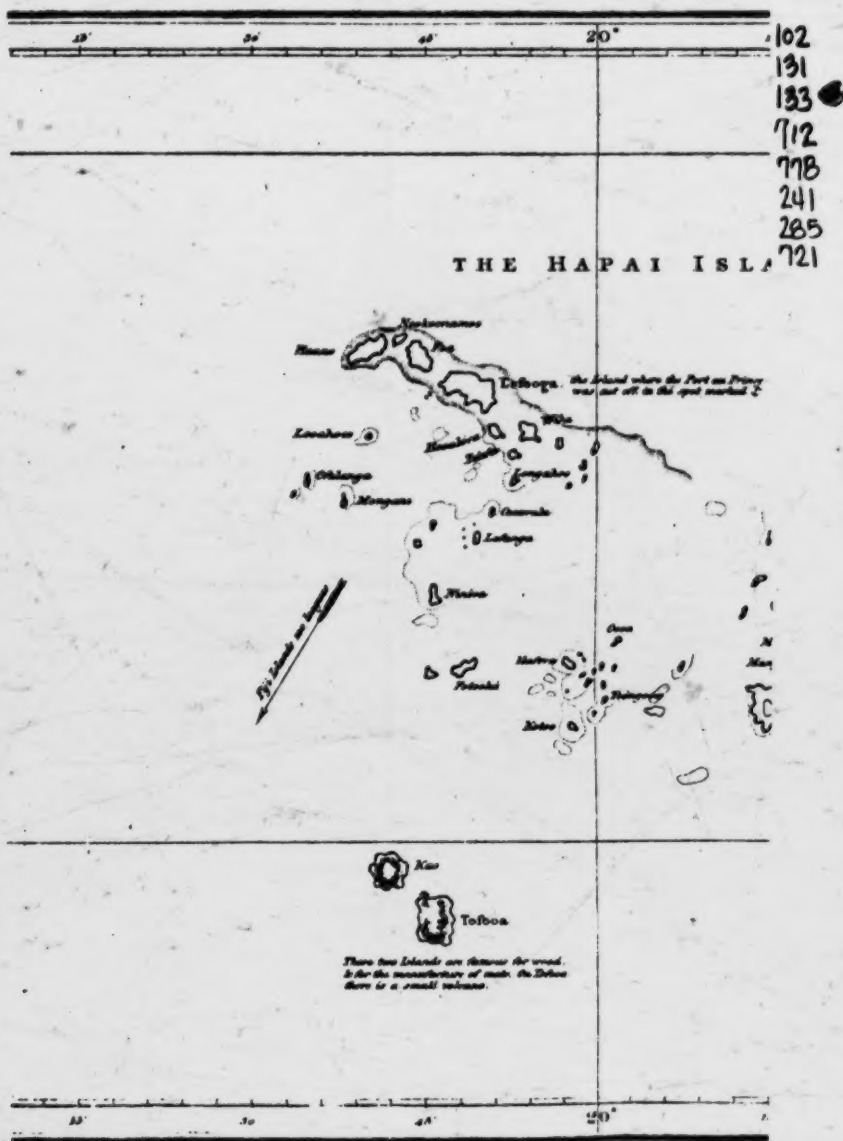
2: Mariner F-5 (1806-1810) 1818 OU9 Tonga OU9



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[Facing p. 1-A]

2: Mariner F-5 (1806-1810) 1818 OU9 Tonga OU9



313 opportunity of witnessing the miraculous absti-
634 nence of this sort of fish.

778 On the island of Tofooa there is a small vol-
825 cano, situated near the northern extremity,
727 from which smoke almost constantly issues, and
pumice-stones are very frequently thrown out.

1033 An eruption of flame takes place, sometimes
twice or thrice a week, and at other times
scarcely once in two months, and generally
1033 lasts from one to two or three days. The way
727 to the top is extremely difficult; but Mr. Ma-
riner, taking one of the natives of the island
for a guide, resolved to ascend it. They began
the ascent early in the morning, and, although
their progress was much impeded by the quan-
tity of loose pumice-stone, and often rendered
very dangerous, they reached the top in about
four hours. There was at this time no erup-
tion of flame, which had ceased a few hours
before, after having lasted three days; smoke
there was, however, in abundance, but which
did not much annoy them, as they were on the
windward side: sundry explosions were also
heard from within, like the noise of water
being thrown upon burning pitch. The crater
1033 was about thirty feet diameter. Whilst they
727 were here, Mr. Mariner took care not to let
578 his companion approach too near, lest he might

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have some sinister intent : such precaution was by no means unnecessary, as this species of treachery, when it can be performed secretly, is not unusual, particularly among great warriors, when they have some petty interest to consult. This, however, is not to be considered the natural disposition of the Tonga people, but a practice which, along with that of war, they have learned from the natives of the Fiji islands, where a man seldom goes out, even perhaps with his greatest friend, without being armed, and cautiously upon his guard. Mr. Mariner had, therefore, provided himself with a pistol, as a defence against any violent measures on the part of his companion. On their return down the mountain, he told his companion that he might have shot him dead, and nobody would have been the wiser, to which the man replied, " I see you are *loto boto* *, like " the Fiji people ;" meaning that he possessed policy and caution against treachery ; and added, " as I am unarmed, it is a proof that I " had no ill design, and therefore did not suspect any in you."

Whilst on this island, Mr. Mariner went to see the grave of an Englishman, John Norton, belonging to the boat of the Bounty, Captain Bligh, whose crew had mutinied. He was led

* Of a wise mind.

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CHAP. IX.

Island of Hoonga—Curious cavern there, and how first discovered—Anecdote of the person who first discovered the cavern—Description of the sport of shooting rats—Popular tale of the origin of the Tonga islands—Finow's return to Vavaoo—General *fono*, and seizure of several chiefs—Stratagem used to secure Cacahoo—Several of the prisoners taken out to sea to be sunk; their conversation on the way—Conduct of Cacahoo whilst sinking—Conduct of the widows of the deceased, particularly of the widow of Now Fahoo—Description of the plantation of Mahe Boogoo—Popular tale of what happened at this plantation in former times—Tonga song—Abundance of a peculiar fish found here—This plantation given up by Mahe Boogoo, and conferred on Mr. Mariner by Finow—Mr. Mariner's providential escape from a shark—A dead spermaceti whale found off one of the islands—Their method of making ornaments with its teeth—Anecdote exemplifying the high estimation in which whale's teeth are held—Still greater value of them at the Fiji islands—Arrival of Cow Mooala from the Fiji islands.

FINOW, having at this time no business of importance on which to employ his attention, resolved to go to the island of Hoonga, lying at a small distance to the southward of Vavaoo, in order to inspect the plantations there, and to recreate himself a little with the sport of shooting birds and rats. Mr. Mariner, as usual, formed one of the party. On this island

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- 133 there is a peculiar cavern, situated on the western coast, the entrance to which is some feet beneath the surface of the sea even at low water; and was first discovered by a young chief, whilst diving after a turtle. The nature of this cavern will be better understood if we imagine a hollow rock rising sixty feet or more above the surface of the water; into the cavity of which there is no known entrance but one, and that is on the side of the rock, several feet under the water, which flows into it; and consequently the base of the cavern may be said to be the sea itself*. Finow and his friends, being on this part of the island, proposed one afternoon on a sudden thought, to go into this cavern, and drink cava. Mr. Mariner was not with them at the time the proposal was made; but happening to come down a little while after to the shore, and seeing some of the young chiefs diving into the water, one after another, and not rise again, he was a little surprised, and enquired of the last, who was just preparing to take the same step, what they were

* The depth of the entrance below the surface differs of course with the different heights of the tide: when Mr. Mariner entered, it was about six feet below the surface: Jeremiah Higgins says it was two or three feet when he went in, at nearly low water, at which period it is very difficult to enter, on account of the swell.

727 discover, being directed by the voice, Finow and the rest of the company, seated like himself. Nevertheless, as it was desirable to have a stronger illumination, Mr. Mariner dived out again, and procuring his pistol, primed it well, tied plenty of *gnatoo* tight round it, and wrapped the whole up in a plaintain leaf: he directed an attendant to bring a torch in the same way. Thus prepared, he re-entered the cavern as speedily as possible, unwrapped the *gnatoo*, a great portion of which was perfectly dry, fired it by the flash of the powder, and lighted the torch. The place was now illuminated tolerably well, for the first time, perhaps, since its existence. It appeared (by guess) to be about 40 feet wide in the main part, but which branched off, on one side, in two narrower portions. The medium height seemed also about 40 feet*. The roof was hung with stalactites in a very curious way, resembling, upon a cursory view, the gothic arches and ornaments of an old church. After 521 having examined the place, they drank cava, 2nd and passed away the time in conversation upon 517 different subjects. Among other things, an 822

* Jeremiah Higgins thinks it was not near so high: he had the light of the sun setting opposite to the entrance, and refracted through the water. Mr. Mariner had a superior light, from his torch.

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of Vavaoo, the young chief returned with his wife to the last mentioned island, and lived long in peace and happiness.

Such, as to matter of fact, is the substance of the account given by the old mataboole. There was one thing however stated, which might appear in opposition to probability, viz. that the chief's daughter remained in the cavern two or three months, before her lover found an opportunity of taking her to the Fiji islands: if this be true, there must have been some other concealed opening in the cavern to have afforded a fresh supply of air. With a view to ascertain this, Mr. Mariner swam with the torch in his hand up both the avenues before spoken of, but without discovering any opening; he also climbed every accessible place, with as little success. At the time Jeremiah Higgins was in this cavern it was nearly low water. He felt a draught of air coming from the left, and on examining the source of it found a hole which he thinks was more than a foot diameter, from which proceeded a tolerably strong and steady breeze, but not the least glimmer of light. This opening he guesses to have been about four feet above the surface of the water at that time. When Mr. Mariner was there, it must have been nearly high water, and the hole

729 probably covered : and even if it were not con-
 133 cealed it would transmit no current of air in-
 wardly unless the tide were going out, which
 he thinks was not the case. At the time Hig-
 gins was there the weather was perfectly calm,
 not a breath of wind stirring ; consequently,
 the influx of air must have been occasioned by
 the descent of the surface of water within : on
 the other hand, when the water rises the air
 must rush out. This cavern therefore may be
 said to respire like an animal ; the rise and fall
 of the tide acting as a diaphragm, and the
 above-mentioned narrow passage as a breathing

[696] hole. Jeremiah Higgins also heard the story
 [584] of the young chief and his mistress, which
 [823] perfectly accorded in all the material points
 [173] with what is told above : it appears from his
 narration as well as from Mr. Mariner's, that
 the natives give this account of the two lovers
 as a piece of true history, not a romance.

133 There is a sort of shelf at the farther end of
 the cavern and high up, which is pointed out
 as having been used for a bed-place.

224 Finow and his party having finished their
 [519] cava, dived out of the cavern, and resumed
 [634] their proper dress : after which they proceeded
 across the country, and got into the public
 roads, to amuse themselves with the sport of
 [136] shooting rats. These animals are not so large

[565]
 [262]

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was obliged to give up the design altogether. 764
 It was suspected that Finow would have been 152
 very angry on hearing her intention, but, on 668
 the contrary, he praised it much, and approved
 of it, as being not only a meritorious act of
 bravery, but a convincing proof that her affec-
 tion for her deceased husband was great and
 genuine.

After this transaction all the Vavaoo chiefs 634
 paid remarkable attention to Finow, not fail- 565
 ing to send him frequent presents of cava, 491
gnatoo, &c., and this they were the more
 anxious to do, as, being the richest men in the
 island, they were apprehensive that, in case
 their conduct displeased Finow, he might form
 another conspiracy against them, with a view
 to deprive them of their possessions; for they
 now found by woful experience, that he was
 not a man to be trifled with, and that his ho-
 nour was not safely to be trusted to.

The king now spent a considerable portion 634
 of his time in country excursions, for the pur- 517
 pose of shooting *calai*, of which sport a de-
 scription has already been given. About this 484
 time a canoe was dispatched to the Hapai 226
 islands, for the purpose of procuring a quan- 133 ●
 tity of fish, several species being there found
 in much greater abundance than at Vavaoo, or,
 at least, there is a much better opportunity of

424 catching them, owing to the greater number of
 [226] reefs and shelves. With this canoe, a certain
 [133] chief, named Mahe Boogoo, departed for Ha-
 pai, where he possessed a large property, on
 423 which he was desirous to reside for the future.
 [591] He had also a plantation at Vavaoo, situated
 [431] on the northern coast, about a mile and a half
 [634] long, and half a mile broad, one end of which
 ran down close to the water's edge: this pro-
 823 perty he made a present of to the king. It will
 be proper to give a description of this planta-
 tion, because it includes, near the sea, the most
 romantic spot in all the Tonga islands; which
 constitutes the subject of many of their songs,
 and is a place of resort to the young and old of
 both sexes, who wish to enjoy, for a few hours,
 the luxury of romantic scenery: it is famous,
 also, for having been, at a former epoch, the
 scene of an enterprising action on the part of
 some young chiefs, who took refuge there from
 their adversaries, and obstinately held their po-
 sition for six months.

133 It happens that nature has assembled in this
 137 spot, not only the wildest profusion of the ve-
 getable kingdom, over which the lofty *toa* tree
 stands pre-eminent, but also objects of another
 description, overhanging rocks, hollow-sound-
 ing caverns, and steep precipices, calculated to
 give an aspect as bold and sublime as the ima-

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gination can well conceive, and constituting a species of scenery, which, in proportion as it is more rare, is more admired by the natives. To this retired spot you proceed along a road which runs through the whole length of the plantation, till you arrive at a thick wood of *tamanoo* and *toa* trees, situated on a very steep descent, down which the road becomes a narrow path, winding from side to side, and beset on either hand with the *myîle* and *jiîle*, and other shrubs, planted by the liberal hand of nature, whose variegated flowers perfume the air with the most delightful aromatic fragrance; whilst, from the lofty branches of the trees, the ear is soothed with the soft and plaintive voice of the wood-pigeon calling to his mate. Having proceeded with slow and lingering step along this winding path, for about five hundred yards, a flat plantation of cocoa-nut trees presents itself, through which, at a little distance, a beautiful prospect of the sea suddenly bursts upon the view. On each side a steep and lofty ridge of rocks, in the form of a crescent, extends into the water, forming a sort of bay. The ridge of rocks on the left hand are, for the most part, the highest, but, at the termination of that on the right, one, loftier than the rest, extends upwards to a great height, like the turret of some ancient battlement.

823 On this rock in former times, as popular tradi-
 669 tion records, a band of young chiefs, the heads
 [133] of a conspiracy, took refuge from the rage of
 their adversaries, and held the place during six
 months*; it being quite inaccessible, except
 by one narrow path, exceedingly steep and
 dangerous, not wide enough to allow two per-
 sons to pass up abreast. This passage was, of
 course, perfectly under the command of those
 above, who, by rolling large stones down,
 could, at any time, hurl destruction upon
 whomsoever might rashly attempt to ascend.
 Here they remained in security, as long as
 their stock of provisions lasted, and even when
 this was expended, they refused to yield, till
 famine and raging thirst had destroyed all but
 three, who, being tempted by a promise of par-
 don, gave themselves up to their adversaries.

823 Scarcely was this done when they were taken
 687 before the king, who cruelly ordered them to
 727 be massacred in his presence. The number of
 669 those who died upon the rock were five, and
 they were buried on the spot: three of the
 graves are still very apparent; the other two
 are pointed out, but they are not in so distinct
 a state. The natives, now and then, ascend
 [823] this rock, to enjoy the sublime beauty of the
 [484]

* They had supplied the place beforehand with *ma*, on
 which they lived during the whole time.

OF THE TONGA PEOPLE.

321

Goáa te hóli ger nófo ; cohái ténne áloo ?
 Cá toógoo Vaváoo, móe mótoo lálo,
 Lícoo o'ue, móe Váoo-áca,
 Moë Hálla-vy' gi Máccapápa,
 Máttalóco, mo fānga myíle,
 A'na a Toótaw-i, béa Mofóóe,—
 lky' téoo toó gi he hífoánga,
 Jío hífo gi he felów tafānga.
 Toógoo he toogi-héa a Háfoolooohów
 Ger vála he gnáfi-gnáfi a Tofoóá mo Káo.

533
539

Alas! we are entering upon our voyage
 By leaving Máoonga-láfa and Talów !
 Anxious am I to stay; who can wish to go?
 Departing from Vavaoo and her neighbouring isles,
 And Lícoo-óne, and Váoo-áca,
 The road of springs near Máccapápa,
 Máttaloco and the myrtle plain,
 The cave of Toótaw-i, the beach of Mofóóe,—
 No longer can I stand upon high places*,
 And look downwards on the fleet of small canoes.—
 We must leave the crimson gnátoo of Háfoolooohów
 To wear the coarse mats of Tofoóá and Káo!

The above is a translation as literal as the sense will allow of this song: it must not, however, be taken as a specimen of the best: it is given because it is the only one of this kind that Mr. Mariner is acquainted with.

Such are the names of their different kinds 533
 of songs, some of which are to be considered 177

* This alludes to the Hapai islands being for the most part flat; and although Tofoóá and Káo are both high islands, yet they have not such steep descents as are common at Vavaoo. [133] 6

127 by the Catholic Missionaries of the Marist Brotherhood¹ and the other by the Rev. Shirley W. Baker.²

104 With one exception the Tongan orthography followed in this paper is that set forth on pages 1 and 2 of the Dictionnaire Toga-Francais. Sixteen symbols in all are used, of which five represent vowels and eleven consonants. The vowels are *a, e, i, o,* and *u* and the consonants are *f, h, k, l, m, n, ng, p, s, t,* and *v*. *Ng*^{3a} is used in this paper in place of the *g* employed in both the Dictionnaire Toga-Francais and in Baker's Dictionary.

114 Baker's Dictionary differs from the Dictionnaire Toga-Francais in using both *b* and *p* instead of *p* alone; and *s* and *j* instead of *s* alone.

127 Owing to the fact that practically all of the place names presented in
128 this paper are drawn from government records, charts, and various Tongan manuscripts and are recorded in varying orthographies and largely without diacritical marks, it is impossible to consistently indicate by diacritical marks the exact pronunciation of each word. For particulars concerning Tongan phonetics the reader should consult the dictionaries.

THE TONGA OR FRIENDLY ISLANDS

131 The group named the Friendly Islands by the famous navigator Cook lies between the parallels of 15° and 23° south latitude and between the 173rd and 176th meridians west of Greenwich.

103 The name Tonga as applied to the whole group is derived from the name of the largest island of the group, generally known as Tongatabu.⁴

133 With the exception of the outlying volcanic island of Niuafoou approxi-
[131] mately in latitude 16° S and longitude 176° W, the islands of the Tongan archipelago lie in two parallel chains stretching from north to south. The eastern chain is of coral formation. The western chain is volcanic.

The eastern chain includes more than one hundred islands, most of them low-lying—in fact, little more than uplifted coral reefs. They are exceedingly fertile and bear the great bulk of the Tongan population.

The western volcanic islands are not numerous. They are from south to north: Ata (1165 feet elevation), the twin islands of Hunga Tonga and Hunga Haapai (respectively 490 and 400 feet elevation), Tofua (1670

[113] ¹ Missionnaires Maristes, Dictionnaire Toga-Francais et Francais-Toga-Anglais. Précedé d'une Grammaire et de Quelques Notes sur L'Archipel par les Missionnaires Maristes, revu et mis en ordre par le P. A. C. s.m. Publication de l'oeuvre de Saint-Jerome, Librairie-Editeur, Paris. Chadenat, 1890.

[113] ² An English and Tongan Vocabulary, also a Tongan and English Vocabulary, with a list of Idiomatic Phrases; and Tongan Grammar, Auckland, N. Z., 1897.

³ The spelling Tongatabu has been unfortunately adopted by official geographic boards and gazetteers. The correct orthography is Tongatapu.

^{3a} In the arrangement of the gazetteer, *ng* follows *n*.

Gifford—Tongan Place Names

5

feet elevation), Kao (3380 feet elevation), Late (1700 feet elevation), 133
Fonualei (600 feet elevation), Niuatoputapu (350 feet elevation), and
Tafahi (2000 feet elevation).

Two of the coralline islands are quite elevated; Eua attains the height
of 1070 feet and Vavau the height of 670 feet.

Most of the Tonga islands fall both politically and geographically into 133
three divisions. From south to north they are the Tongatabu group, the 101
Haapai group, and the Vavau group. Geographically these groups embrace
only the coral islands, but politically Kao and Tofua are parts of
Haapai, and Late is a part of Vavau, though all three are volcanic and lie
thirty or forty miles west of Haapai and Vavau proper.

The southernmost portion of the Haapai group is cut off from the main 133
portion by about ten miles of deep water. It is often dignified geographi-
cally with the term Nomuka group. It is here treated, however, as a por- [128]
tion of Haapai.

TONGAN GEOGRAPHIC POEMS

Tongan poets are much given to the composition of verses dealing en- 538
tirely with Tongan geography; in fact, the feeling for the beauties of 181
nature is one of the marked cultural characteristics of the Tongan people.
Martin⁴ has published two such compositions, and a number of poems 128
dealing with the islands of the Tongatabu, Haapai, and Vavau groups are
presented in the following pages of this paper.

"Koe Otu Motu o Haapai" is a fragment of ancient verse evidently ex- 539
pressing the feeling of monotony which had overcome the poet, after a long
sojourn on the small and low island of Lifuka in the Haapai group. With 539
the high volcanic islands of Tofua and Kao in sight to the westward his appé- 133
tite for wandering got the best of him. He at last obtained surcease for his
feelings by sailing to Auhangamea, a deep passage between the islands of
Uoleva and Tatafa. From thence he appears to have gone to rugged
Tofua, where he scaled the rocky hills and viewed an active volcano and
the great crater lake, which occupies the center of the island—a change,
indeed, from the gentle charms of low-lying, coconut-enshrouded Lifuka.

⁴Martin, John (M.D.), *An account of the natives of the Tonga Islands in the* [113]
South Pacific Ocean, with an original grammar and vocabulary of their language.
Compiled and arranged from the extensive communications of Mr. William Mariner,
several years resident in those islands, 2nd ed., vol. 1, p. 293; vol. 2, p. 321, Lon-
don, John Murray, 1818.

539

2. Ete viki ka fua mei he Toa,
Haangongo pea moe Tanoa,
Hufangalupe ke mou iloa;
Koe mea lelei ia o Tonga;
Hola anga e lupe a Tangaloa.
3. Utuvetevete koe vai pango
Utufia ehe folau aalo;
Ko Vaiangahela nofo kau fano.
Fakaofa e hafu ae hingano.
4. Ko Tukutukunga mo Anatelea,
Ko Fakamalunga siutafea.
Kau ta kamakama he telea
He telia e matangi kuo hema.
5. Koe Moa pea mo makatefua;
Kapakau mate tuu ki lulunga,
Ne lavea he tolo mei Eua.
Makatangi pea moe loto na,
Ko Fakahakengatu ta tukua.
6. Fakapotu moe Lotoautongi
Ki siono vai fakahaaloli;
Ta tukua mo hono hingoa kovi;
Foilulu pea mo Maloloi.
7. Touhuni mo Makasialefata
Tuu ai o mamata ki moana.
Ene melo e folau tafaanga;
Ko atu ni kuo tuku tafatafa.
8. Ngalu fanifo maka lomua
Feangai moe otu maka hiva;
Fasi mei lalo Talaahoa.
Ta fanifoa kata evehia.
9. Makatautau mo Puhamomala,
Ko Kahana pea mo Halakakala,
Ko Nuanga moe Halafakatafa,
Ne uta kiai e kau tangata.
10. Ko Keviki mo Faihavamotua,
Tafe ki moana e vai mapuna,
Fasi he maahi ufi toofua;
Ko Utufufu ta fakalanua.
2. My praising will start from Toa,
Haangongo and Tanoa,
Sanctuary of the Pigeon be it known
to you;
These are the nice things of Tonga;
Fled there the pigeon of Tangaloa.
3. Utuvetevete the unlucky water
Baled out by the paddling canoes;
Vaiangahela stay while I go.
Was pitiful the dropping of the
hingano flowers.
4. To Tukutukunga and the Whitish cave,
To Fakamalunga where the boat race
is held.
There I'll catch rock crabs in the
crevices
For the wind is from the northwest.¹²
5. The Fowl and all the stones:
The dead wing stands on the west side,
Wounded by (Maui's) throw from Eua.
Makatangi and the deep sea,
Fakahakengatu we go and leave.
6. Fakapotu and Lotoautongi
Whose water is scattered with *loli*
shellfish;
We two will leave it and its bad name;
Foilulu and Maloloi.
7. Touhuni and the Rock of the Siale-
fata
Stand there and look to the ocean.
It is brown with the fleet of fishing
canoes;
The bonitos are jumping at their sides.
8. The surf plays on the rock submerged
Opposite to the row of nine stones;
The breakers roll from below Tala-
ahoa.
We will swim in the surf then go for
a walk.
9. Makatautau and Puhamomala,
Kahana and Halakakala,
Nuanga and Halafakatafa,
The favorite places of men.
10. Keviki and Faikavamotua,
Flow to the ocean the running waters,
Break and roar the waves as they run;
At Utufufu we two will rinse off the
salt water.

[133]

¹² The northwest wind makes it calm on the southern shore, so that crab fishing and boat racing are possible.

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THE ORIGIN OF NUKUNAMU ISLAND¹²

The small island of Nukunamu lies between the islands of Foa and Haano in the Haapai group. Tongan mythology has it that Nukunamu was originally a piece of land which filled the site of a swamp on Foa. The manner in which this piece of land came to be the island of Nukunamu is related as follows:

Two gods from Samoa, Haelefeke and another, came to Haapai. They stole a piece of land from the island of Foa, leaving a great hollow where they removed it. This hollow is occupied by the swamp now known as Malaeamoho. A Tongan god named Tafakula (literally Red Edges) witnessed the theft. He proceeded in pursuit of the thieves. He went to the top of a mountain on the volcanic island Tofua. He there took off the garments which he had girded about his loins and stooped over, exposing his red anus. It shone brightly like the setting sun, frightening the Samoan gods exceedingly. They dropped their booty in the ocean off the northern end of Foa, and there it is to be seen today in the form of the island of Nukunamu. The affrighted Samoan gods hastened back to their native islands.

THE ORIGIN OF KAO ISLAND¹³

This is the story of how Kao was taken from the neighboring island of Tofua, which was once so high that it could be seen from Samoa and also from Tuahivavatu (Eight Ridges).

Three deities from Samoa, Tuvuvota, Sisi, and Faingaa, conspired to steal Tofua. So they came and tore up the high mountain by its very roots and its place was taken by a large lake (the crater lake of Tofua). This enraged the Tongan gods very much and one of them, Tafakula, essayed to stop the thieves. He stood on the little island of Luahoko (in the Haapai group) and bent over so as to show his anus. It shone so brilliantly that the Samoan deities were struck with fear, thinking that the sun was rising and that their dastardly work was about to be revealed. Hence, they dropped the mountain close to Tofua and fled to Samoa. The mountain became the island of Kao.

[Tofua is some sixteen hundred feet in height and has a crater lake in the interior. Just north of Tofua rises the great volcanic cone of Kao, three thousand three hundred and eighty feet in height.]

¹² Told by Joel Helu, Mayor of Lotofoa, Foa island, Haapai.

¹³ Told by Mesake Lomu, of Fofua, Foa island, Haapai.

538 'Alu atu au he hala,
555 'Oku tukua ai e tuinga kakala,

539 'Ave ia mo'o me'a, he koe tui fananga.

I went along the road,
There was left there a string of sweet
flowers,
Take it for so-and-so, for he is the
believer of tales.

The phrase *tui fananga* (believer of tales) is said to be the correct rendering, and not, as I was inclined to interpret, *tu'i fananga* (king of tales, king of story-tellers). Another expression of similar import is, *Koena e kie koe*, 'ave ia ma'a me'a, he koe tui fananga (There is the mat yonder, take it for so-and-so, for he is the believer of tales). Perhaps the whole thing is merely a jocular letting-down of the tension of one who has believed too implicitly and been too deeply interested in the tale. So-and-so ought to have a prize, he is so good a listener.

538 There is said to be a kind of formula for finishing the telling of a tale. When the story-teller has finished his narrative he says *fananga*, to which someone replies *iso*, which usually is used in disapproval.

538 The man of less scientific culture outstrips his more sophisticated fellow
823 in peopling the clefts and the hills, streams and trees with uncanny spirit folk. Gifford (21, 22) has recorded a number of the poems and tales of Tonga which are attached to various localities and dwells upon the beauties of the Tongan's native land. The number of such tales is probably countless. Those here given are a few additions to Gifford's collection.

193 Tonga, composed mostly of low coral islands, is almost devoid of surface running water. There are underground streams in Tongatabu and Vavau, but with the exception of a small river, Niutoua in Niua Toputapu, the only surface streams on the inhabited islands are on Eua, which has several streams and little waterfalls. The rarity of rivers doubtless makes them
[103] the object of greater value and interest. A tiny rivulet on the weather side of Eua has no less than four different names at different parts of its diminutive course from the forest to the sea.

Eua rises boldly in two great terraces to a height of over a thousand feet, the forest giving way on the uplands to open rolling downs. On the sheltered side of the island, where a stream flowing through a fairly deep ravine enters the sea, is a little bay, the main anchorage of the island, but difficult of access when the surf breaks heavily on the reef at its mouth. In some places on the weather shore, great cliffs drop abruptly to the sea; in other places, the land falls sheer to a wooded plain about four hundred feet below. Seaward, the plain is terminated by lofty cliffs. To the south, the tiny islet of Kalau, fringed by surf, is a silver-encircled gem in the tropic seas. This island, cut off from the mainland by deep sea, presents a surface of romantic grandeur and beauty unusual in these isles, and as the tradi-

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tionary locale of many of the exploits of Maui, is rich in features to which are attached the names and tales of historical and legendary beings. 133

Vavau, to the north, another picturesque island, and one rich in legendary lore, is a land of beautiful wooded hills, rising to a height of 500 or 600 feet, with entrancing views of coast line and the clear emerald and blue tropical sea. On one side of the main island, islets fringe the deeply-indented shore, forming a harbor of singular loveliness, whose bays run far into the mainland and between scarcely separated islets, with everywhere the luxuriant greens of tropical foliage coming right to the water's edge.

STORIES CONNECTED WITH PLACES

TUUTAKI IN EUA

Gifford (22, p. 101) has related how the warrior Tuutaki, after defeating in battle his wife's relatives, was pushed by her over the edge of a cliff, in Eua, as he was drinking. The scene of his death is still pointed out. A small ledge of rock overhangs the cliff, at the foot of which is a little wood, between the cliff and the sea. Tuutaki sat resting after the labors of battle on the projecting ledge of rock. He struck the handle of his spear, of the sort called *taomataua* (double-pointed or double-faced spear) into the rock beside him. The hole he made is still to be seen, named for the spear, *Taomataua*. The tree on which Tuutaki was impaled when he was pushed by his wife from the cliff edge was a nutmeg (*kotone*), and the red sap of the nutmeg is called *toto-'o-Tuutaki* (blood of Tuutaki). 539 823 103 824

In a cave at the bottom of the cliff at this part of the coast is a rock which is held to resemble a canoe with people in it, and is called *Vaka Fisi* (Fijian-canoe). This is reputed to be the very canoe which was on its way from Fiji to attack Eua, but was deterred by the sight of Tuutaki impaled in the tree. The Fijians, ignorant of the fate of Tuutaki, supposed that he was waiting in the tree to give them battle. The way to this cave is difficult and dangerous, impracticable to all but skillful climbers, and the magnificent scenery is a fitting theater for the exploits and deaths of heroes. A belt of open grassy land, level, or gently sloping from the forest behind, fringes high cliffs, in some places rising sheer from the sea, but below *Taomataua* is a little wooded opening. In this opening is the stream *Veefefe*, which sprang from the shattered drinking-vessel of Tuutaki when he fell. Still another site associated with Tuutaki is *Matapa-a-fefine*, (Woman's gate). On high ground inland from these places are to be seen the remains of the trenches of a fortress which Tuutaki, supported only by his wife, is reputed to have held against a foe of vastly superior numbers. One gateway the hero left to the woman to guard, while he guarded the others.

539 7. The good will of her husband's sisters is of importance to a woman: for
773 example, one of the causes assigned for difficult labor is the ill will of the husband's
sisters.

775 8. The literal translation of *taahine* is girl, maiden. This is a respectful term,
used of chiefly women, irrespective of marriage or age. In the same way *tama*, *tamasii*
[607] (lad, boy) is applied to men who are chiefs.

845 9. This line is difficult. It is perhaps a proper name applied to the sleeping wife.
[192] Utukaunaga is evidently a place name and translated it indicates the place where the
man lies, and where his body, anointed with sweet oil, has been so foully used.

10. The expression is *te'e tama*, was thus written by the writer, who took the
[126] story down. *Te'e* in this position is unknown to me; possibly it is *te*, the rare article.
[192] It is provisionally translated "my."

11. Onemalama is the compound or area within which the compound of Lolo-
matokelau was situated. Haatafu, a wider name, is the village or area embracing
539 Onemalama and other places. This is a very common feature of present-day nomen-
773 clature but possibly it was not so common earlier. This story does not appear to be
775 recent and it is possible "in Haatafu" is added by the modern narrator to assist identi-
361 fication. It is said that the gathering of Tongans into comparatively large villages is
a recent innovation, originating perhaps in war, and encouraged by the needs of present-
day education and religion.

178 Pages 23-25. Sinilau and Hina, daughter of Puko

539 1. The expression "branching ivory" (*lei-mangamanga*) seems to be quite un-
773 known to present-day Tongans, but probably indicates the female pudenda. "*Lei man-*
192 *gamanga* is probably connected with the *rei* of Atu" (13, no. 3). Best (3) writes
of "the curious stone artifact of Atiu fashioned to resemble and represent the female
organ."

Pages 25-26. Hina, Sinilau, and the jealous demon wife

[849] 1. The idiom for a pregnant woman's longing for a special food is rather striking.
She is said to be pregnant, or to have conceived, to the food. In this instance: Hina
oku huihua ki he atu.

2. *Ko Vahi e*, literally, "That is Hawaii" (17, No. 358). "*Fuhi* *famalama*, cluster
of gleaming hala."

539 4. Kapala is perhaps the island of Kambara, Fiji; but several places, not islands,
773 are also called Kapala (21).

[103] Pages 34-37. Hina and Nukuokakala

[197] 1. Doubtless the dialect of Niua Foa, as spoken today, has been modified by the
language of the main part of Tonga.

[133] 2. The steep rocky shores of Niua Foa afford little accommodation for boats.
The natives support themselves in swimming with a long, light pole under the arm.

3. Firing a gun, the modern narrator's version of what was presumably the beating
the drum.

[192] 4. *Mali*, that is, English "marry" (or French, *mari*), both used as noun, of either
husband or wife, and as a verb.

Pages 39-41. Kulakehahau and Tongamaulau

539 1. The heroine's name is spelled "Tonga-maulu'au," and "Tonga-mauluu." The
hero's name is spelled both "Kulakehahau" and "Kulakehahau."

2. The probable translation of *Keuiafanafana* is "Overcome by a whisper."

[192] 3. The respectful word for speech, *folofola*, is used properly enough by the
[195] maiden to her lover; *taataa*, an equally respectful term for blood seems less proper
when used by the girl of herself. No one, not even the greatest chief, uses respectful
terms of himself. Probably the exigencies of rhyme have forced the word upon the
narrator.

[192] 4. In my copy of text, *kamosia* stands *kanosia*, a word which I do not know. I
conjecture that *kamosia*, meaning signed to, beckoned, persuaded, is correct.

5. This is either the name of the man's compound, or simply a common noun
meaning gathering place of companions.

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6. The references are to various mats of Tonga and to collecting them, figuratively, as a gift in honor of the dead man. The italicized words are names of mats. Tungua, Matuku, Uiha, Lifuka, are all in Haapai. 764
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103
644
7. The reference is to the Tamaha (the daughter or son) of the Tui Tonga Fefine. The Tamaha lived in Tungua. Here she is called Falotuma, a species of hala. "Even if a mat obtained from Tungua should prove to be of not much account as a mat yet it derives value from its origin in the island of Tamaha" (12, pp. 178-189).
- 7a. "Mat of red feathers" means "mat adorned with red feathers." The form *hulu kula* is interesting, as the normal Tongan would be *fulu kula*. This form hints at the likelihood of the introduction of the adornment of mats with red feathers from some one or other of the groups of islands farther east.
8. Plover (*hiu*) and double-bird (*manulua*) are two of the designs used on the native cloth. [531]
9. Toku is a name occurring in several parts of Tonga (21), but evidently here it is one or other of the places so named in Vavau. [103]
10. Late is a high volcanic island southwest from the main part of the Vavau group. "Clothing for Mua" (the capitol) would be a mat of good kind that was customarily used as a dress for Mua. [103]
11. The poet having finished what he has to say about the mats and cloth of Tonga will now sail to Samoa to collect further wealth. Ulamoleka is still remembered as a very expert navigator, and these lines give him the opportunity to use his knowledge of the stars. The names used, such as Amonga and Tupa (16, pp. 4-9) are star names. The opportunity of direct identification of the stars by their Tongan names seems to have passed irrevocably. Amonga, which is not included in my earlier list, is given by Pratt, for Samoa, as "The name of the stars which form the belt of Orion." Alotulu seems to be another name for the same stars. A very important part of the equipment of the skillful navigator was the knowledge when to leave one star as a guiding mark and pass on to the next (compare "Then pass on and leave," line 43). These lines may recall a voyage which Ulamoleka and Falepapalangi had actually made in company to Samoa. [502]
[821]
12. These lines seem to mean that Ulamoleka was able to keep his boat ahead of Falepapalangi, probably recalling a voyage they had made. [502]
13. Manuka, or Manua, the eastern part of Samoa.
14. Nafanua was a goddess of Savaii, one of the eastern islands of Samoa. She was the daughter of Saveasiuleo, god of Pulu (36, p. 38; 26, vol. 1, p. 23). In Tongan myth Nafanua is the twin sister of Topukulu, and the daughter of Tokilangafonua and his sister Hina. Tokilangafonua went to Samoa and thither the twin sisters, who were then joined back to back, swam to find him. Their father on seeing them and not knowing who they were, made as though he would strike them; in their alarm the girls jumped apart and were separated. The girls did not know their father, and in their ignorance both became pregnant to him. Topukulu became the mother of the sea god Hemoanuliuli, and Nafanua, of the goddess Tafakula, of Eua. The lines in the poem would seem to mean that Falepapalangi was to remain in Savaii while Ulamoleka passed on eastwards to Manua, although the preceding lines would imply that they both went to Manua. Nafanua is one of the notable personalities on the way, and they turn aside to honor her, either by an actual going ashore and presenting kava at her temple, or, more probably, by the poet honoring her by remembrance in his verses. 764
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773
15. Sau and Leiatua are said to be two chiefs in Samoa to whom Tongans used to go for mats. [764]
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16. The translation of this line uncertain.
17. The names mentioned are places in Fiji, which are now called upon to furnish their quota of fit presents.
18. The text at this place is bad and both text and translations are conjectural.
19. I can not find any appropriate meaning for the Tongan word *kouta*, and conjecture that it is the Fijian *nggouta* (strike), though it is doubtful if even this would give an appropriate meaning. [192]
20. The "hidden wealth" is presumably the gift of the bard. Why this should weary him is difficult to see, unless the meaning is that while he had been thinking of mats and cloth for a present the hidden wealth of his muse has been longing to break forth. [598]
21. With the picture of the pigeon not yet properly trained and breaking its [192]

Pages 86-88. Lakepamoafitu to Fatafehi-Haapai

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1. The word *so* is of uncertain meaning (13, no. 2).
2. The position of Olomafua is not identified.
3. Popua, occurs as name of several localities, one of which is a hill near the beach Tukulolo, near Maofanga in Tongatabu. This part of Tongatabu has close associations both with the family of the Tui Tonga and with that of Finau Ulukalala of Vavau. Doubtless Olomafua is in the vicinity. [103]
4. "Has she freely given herself to the new lover, or has there been pressure put upon her?"
5. This is a version of the old wonder at woman's inconsistency, which, as usual, is most of all marvelous to the rejected suitor.
6. An inland cliff, *lihu loto*, an inland configuration that looks like the weather shore of an island, is proverbial for deceptive appearance, and hence there is the sense of the woman's deceit as well as of the marvel of her inconsistency. The marvel is heightened by the appearance of a great wave at the inland cliff, that is, what has happened to the lover is not only like a great wave engulfing him, but a wave that rises in a totally unexpected place. From the allusions to Vavau it would seem that Vuna lived in Vavau and possibly he is commencing his married life there with Fatafehihaapai. This further confirms our identification of the persons concerned, as Mariner (28, vol. 1, pp. 87, 310 et passim) mentions Vuna as connected with Vavau.
7. "The summit of his misfortune," and probably also refers to "The topmost roof-timber" referring to the very high birth of the lady.
8. Utulifuka is near Lapaha, Tongatabu, and Avatongo is an inlet or sea-creek near Popua. [103]
9. The figure of speech *kata tuingofua* (easily persuaded laughter, joy) signifies women, and here especially the woman who is easily won over by fair words. [192]
10. Matoto, in Vavau. The trouble has come about by Fatafehihaapai being in Matoto with the rival. [103]
11. Kafoa is a hill in Vavau.
12. Vaofakalava is a lookout place in Vavau.
13. Ovaka is an island in Vavau. The allusion is to the appearing of islands as a boat approaches. The landmarks of Vavau come up over the girl's horizon, possibly an allusion to his own seemingly prosperous love voyage; the various landmarks were coming up, and he had no cause to suspect that there was not to be a happy coming to land.
14. "Lofia is removed to Vavau," such expressions are used of the unexpected and the apparently and the actually impossible. Lofia is the crater lake of Tofua in Haapai. [133]
15. "Ours," the exclusive pronoun, is used. For Lakepamoafitu and his friends there had been an excursion, promising well, but the canoe had met with disaster and the catch lost. These lines may be misplaced, and the list of names perhaps should be continued without this break.
16. Futuna, Tutuila, Manuka are all found as place names in various parts of Tonga; but probably in these lines the author of the poem is ranging farther afield. Talava is perhaps Tarawa of the Gilbert Islands; Futuna Island, Kia, an island of Tokelau; Matuata, not identified; Tutuila and Manuka, in Samoa. The rhymes suggest that two lines have dropped out. Conjecturally *angatoka* is translated "calm"; I have not been able to get a native explanation of this word. [103]
17. "Coast of Remembrance" is the "coast of remembering love." This is probably a name of some locality, but retains its significance of the wistful yearning of his disappointed love. [103]
18. Paepaeua is probably an unidentified place name.
19. In using the word *uuu* (a little poisonous shellfish) Lakepamoafitu refers to himself as cast away. Levafanga is unidentified. [103]
20. Foeta and Foelifuka are two islands in Vavau. The pigeon is the girl. The meaning is not that she has been cast away, rejected, but that the effort to win her has been thrown away because of Vavau.
21. Explanations of *fakamaiva* and *fakaalele* were not to be obtained. Maiva and Alele are both known as place names.
22. Present-day Tongans seem not to know the word *tapiha*, which is rare in Tongan, but compare Samoan, *tapisa*, to laugh. I have found no other occurrence of the expression *ha luo ha ano*, a hole in a cave. Probably it means secretly, furtively. [192]

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It is supposed that a shark thus treated is sure to be taken by the same boat on a subsequent occasion.

20. The words *Ho he*, laughter, indicate that the audience will enjoy his composition. This is explained as the noise of blowing on hot food, good, hot food to be thoroughly enjoyed.

Page 116. Falaolongo

1. The Tongan text of this poem is headed "Sipa oe Meetaki." The word *sipa* seems more properly to be applied to a dance, or to a dance and its song, but evidently here it is used of the song as *meetaki* is one of the dances. The name *Mulikihaamea* also appears in the heading. The best known man of this name is the chief who was Tui Kanokupolu for a few weeks or days after the assassination of Tukuaho in 1799, and fell in the fighting of that troubled time. What connection he has with the piece is not clear. Perhaps it was first performed before him. Perhaps *Mulikihaamea* is the name of the bard who composed the piece, and not that of the king. Some of the places mentioned have not been identified; but probably the poem deals almost exclusively with localities in Tongatabu and its neighbor Eua.

2. Falaolongo (Mat of Longo) is probably a slight elevation, natural or artificial, named after Longo, a noted warrior of Holonga, in eastern Tongatabu. A son of Longo was taken to the Tui Tonga, and grew into big boyhood in the entourage of the king, then ran away and returned to his father. This son's name was Kailahi, after whom the cave mentioned was named.

3. The ninth Tui Kanokupolu, about 1780, bore the name *Tuihalafatai*. The naming of trees is common.

4. The translation reads as though the sighing were that of the wind in the toa tree; but the line might be taken separately from the preceding line, as referring to the murmuring of the sea at *Avataliapi*.

5. *Huafaikitama* translated "meadow," may well "be a pool gleaming upward on the shore-flats." In the absence of information as to whether *Huafaikitama* is a pool on the coast, or a bright patch of verdure or clump of trees in the midst of grass land, it is impossible to say whether *toafa* is shore flats or meadow (downs).

6. *Vailahi* (Great water), one of the larger bodies of inland water in Tonga is indicated, perhaps the crater lake in Tofua, Haapai, or that of *Nuiafoou*. It is thrown in among mention of places in Tongatabu and Eua, the inference being that the poet has lost his way, has suddenly wandered far afield.

7. *Veingangana* (Falling water), *Vaitakiafale* (Led water of house), two streams on the weather coast of Eua. These streams *fekumi*, that is, they seek one another while hidden from one another, or they alternately appear and disappear in the forest. *Vaitakiafale* is an artificial channel leading off from the stream of which *Veingangana* is part. It was constructed by a chief who wished to bring the supply of water to his house. It is said, however, that *fale* may not indicate the house of the chief, but an overhanging rock under which the water flows.

8. "Wind from the north," would seem to indicate that the bard had wandered away from places in Tongatabu in the south, but that he now returns thither. Some of the places mentioned, for example *Meitumu*, are known in Vavau. But it seems best to consider all of the places as in Tongatabu and Eua, with the exception of *Vailahi*, and understand him as meaning that the wind of his muse is from the north throughout. Names frequently occur in more than one part of the group.

9. *Veiatavake* (Pool of the tropic bird) is the name of a pool in Eua, in a cave called *Falcotapouou* (Virgin's house), where water drips down from stalactites.

10. *Veitoto* (Pool of blood) is apparently so called because it gleams red in the rays of the rising sun. It is in a cave in Eua, fed by a small stream which runs out of the pool and on the sea. The "dripping water blown about" is the water of this streamlet where it runs out to the coast, and is exposed to the wind.

11. *Lokupo*, a beach in Eua.

12. The *fatai* is a creeper with scented flowers used in garlands (*Cassytha filiformis*?).

13. *Fotumoko* is near *Fatumu*, in eastern Tongatabu.

14. Sacred Coast (*Liku Tapu*) a portion of the weather-coast of eastern Tongatabu, sacred because of its proximity to the district where the Tui Tonga and his great chiefs lived. *Laulea*, near *Fatumu*, which is mentioned further along in the

Archaeology of Tonga

By W. C. McKERN

INTRODUCTION

In Tonga, as elsewhere in Polynesia, there is little break between prehistoric and historic culture. The archaeology and ethnology overlap and blend. The present work, therefore, is a study of archaeological remains which takes the fullest advantage of available traditions, ethnological evidence, and historical accounts that relate to ancient structures. 128

As a member of the Bayard Dominick Expedition of Bernice P. Bishop Museum, I was afforded the opportunity for a general but careful survey of Tongan archaeology during a period extending from September, 1920, to June, 1921. 114

The extent of my work would have been greatly lessened but for the active interest and cooperation of Her Majesty the Queen of Tonga and Prince William Tungi, and for the sanction and assistance of the Tongan Government through the offices of the Premier, the Honorable Tui Vakano. My thanks are also due to Mateialona, Kalaota, Solomon Ata, Joele Pangia, Vaia, Tuita, Tamale, Malupo, Matauvave, John Havea, Uhatafi, Malakai Lavulo, Kautai, Fakatava, Mary Valevale, and many other Tongans whose services are no less appreciated. Among European residents who rendered me valuable assistance are Mr. John Clemens, Mr. A. Cunningham, Mr. W. H. Murley, Mr. W. Scott, Mr. A. B. Wallace, Father Deguerri, the Rev. R. C. G. Page, the Rev. Saunders and the Rev. E. E. V. Collocott. 000

The spelling of native names and terms as used in this paper follows that adopted by Gifford (10, p. 4). 128

The Tongan archipelago comprises more than one hundred islands. The largest of these, Tongatabu, has a maximum length of about 25 miles. Many of the islands are so small as to call for a statement of size in terms of rods rather than miles. 133

With the exception of a numerically small chain of volcanic islands, bordering the easternmost margin of the archipelago, Tonga is formed largely of coral rock. Some islands, however, consist of a base of volcanic tuff superficially covered with coral and foraminiferal limestones, and attain not inconspicuous elevations. Eua, for example, is 1,070 feet high. The tallest of the volcanic islands, Kao, attains an elevation of 3,380 feet. Most of the islands, however, are relatively flat and low.

The archipelago is naturally divided into three groups of islands, inter-

[p. 3]

[no pp. 1-2]

133 valed by considerable stretches of water. These groups, from north to south, are Vavau, Haapai, and Tongatabu. Of the three, Tongatabu has the largest land unit in an island which lends its name to the entire group. This island was, culturally and politically, the center of Tongan life.

121 Archaeological investigation, extended to cover as much of each of the
172 three geographical divisions of the Tongan archipelago as available time and
184 the distribution of favorable sites warranted, failed to discover any important
128 differences between the archaic remains found in different islands. This cultural uniformity renders it desirable to treat the whole of Tonga as a unit in the present report, rather than to give separate archaeological surveys of any sort of geographic subdivisions.

144 The inhabitants of Tonga are, predominantly, full-blooded Polynesians.
161 Probably never much exceeding twenty-five thousand in number, the Tongans have approximately that population today.

128 An apology is perhaps due for presenting my subject in a form which requires the reader to peruse the entire detailed outlay of evidence in order to obtain a gist of the pertinent facts and the related conclusions. It seems to me that most of the detail is essential to a general understanding of involved problems, and that conclusions, even general remarks, are devoid of meaning when separated from the detail of listed phenomena. I have, therefore, included all the involved data in the running discussion, in order to give the specifically interested student an intelligent, unabridged representation of the field.

172 On first consideration, the archaeological outlook in Tonga is not promis-
114 ing. The student finds here a mottled field, poor in stratified deposits attributable to human sources, but rich in artificial monuments of earth and stone. The greater part of these have not been carefully examined by preceding investigators. Such as have been found mentioned in published accounts have generally been treated as of unknown or doubtful origin.

173 Local mythology has taken full advantage of these wonders and has accounted for their presence in many fanciful ways. There is, however, a much more plausible group of traditions, practically free from dependence upon superhuman agencies, accounting for these structures in a not illogical manner.

173 These traditions, surprisingly consistent in their wide repetition and flatly
114 historical in style, have too frequently been overlooked altogether or purposely disregarded by investigators.

MISCELLANEOUS STRUCTURAL WORKS

THE MAKAVE FILL

173 The use in construction work of rough or dressed stones did not exhaust the native capacity for large undertakings. There are many traditions of large projects, some of them patently impossible, some improbable, others with supporting evidence which cannot be gainsaid.

133 The land just south of Makave, about 3 miles southwest of Neiafu, Vavau, is a long narrow peninsula extending south from the main body of the island. The landward end of the neck of this peninsula is about 100 yards in width. To the seaward side this width increases but is decidedly lower in elevation.

173 Tradition says that this low portion of the isthmus was at one time missing; what is now a peninsula, then existing as an island, called Utuatea, a name now applied to the peninsula. Whenever the district chieftain, Tuihafitu, held a big celebration of any kind, both Makave and Utuatea were constrained to supply large quantities of food. The inhabitants thought this to be too great a drain upon their resources. Accordingly they decided to make one place of Makave and Utuatea in order that but a single quota might be levied against them. This they are said to have accomplished by filling in the channel between the smaller and larger islands. They finished this task in a single night and planted trees over the filled-in area on the following morning.

Kalaota gives a quite different version of this story. According to his account, the island of Utuatea was owned by a man of common birth who held the title of Toutai, a commander of a sailing vessel for the king. The land had been given to him as a reward for services. This man's name was Fea. Tuihafitu, chieftain of Makave, wished to possess this island. Accordingly he assembled his people and set them the task of filling in the separating channel. They completed the task in a single night and planted trees over the new land on the following morning. Fea, since he was only a commoner, was afraid to complain of this treatment; so he left the one-time island in the hands of Tuihafitu and returned to Tongatabu.

173 The area said to be artificially made is nearly 200 yards in width and 6 feet in average height above the shoreline. It was impossible to determine whether it was natural or filled-in land.

KILIKILITEFUA WALL

349 Just south of Makave, at the narrowest part of the isthmus, is a large remnant of what seems to have been a straight stone wall crossing the isthmus from east to west and cutting off the peninsula from the mainland at a point where it is necessary in approaching from the mainland to ascend a marked

an army. These refugees were finally starved out and were all killed in attempting to leave the place. Examination found the cave to be a series of four connected caves, owing their origin to erosion in limestone. They were large, roomy, well protected from the elements, and accessible only by a single, difficult trail. The irregular stone floor was covered in places by a thin stratum, 0.2 feet thick, of mingled sand, ash, and charcoal. Some seashells and a few bones of small birds and fish were present in this material.

The following Tongan caves contain burials:

1. Anaotua (Gods-cave), penetrating the low cliff facing the sea just below the town of Toula, Vavau.

Over the floor of this large cave is a stratum of fine white sand, of a kind not found in any natural formation on this part of the coast. This artificial stratum is of barely sufficient thickness to cover the human remains found buried there. Recently large quantities of this sand have been removed for use in making grave mounds in the modern cemetery at Toula. No native information regarding the cave burials could be obtained.

2. Makatapunitapata (*maka*, stone; *tapuni*, to shut, to put a lid upon; *matapa*, doorway, entrance), on the volcanic island of Late, on the outskirts of the Haapai group.

This cave was not visited. According to reports, it is a large sepulchral cave artificially floored with white sand, upon which the dead have been laid out in rows. The mouth of the cave is said to be sealed by means of a large, rectangular, vertically placed slab of stone, occupying a central position in the opening, and several smaller slabs placed at either side. Some of these smaller slabs have been displaced, allowing entrance to the tomb.

This account seems plausible to me as I examined a similar sepulcher on the neighboring island of Kau—also of volcanic origin. Here a large surface lava bubble had been broken into from the side to an extent sufficient to admit a man, by means of crawling, into the hollow interior. This chamber was 11 feet long, 8 feet wide and 3.5 feet high. A steep slope of broken rock and debris led down from the opening to the cave floor, which was smoothly covered with a light colored sand. A transverse wall of small, rectangular stones separated the mixed material, descending from the entrance, from the sand floor. Eight groups of skeletal material, probably representing eight burials, lay on the sandy floor of the cave. The entrance had been externally sealed by means of a large flat stone which had been removed previous to my visit. The buried material showed signs of having been disturbed, but most of the bones were in a fairly good state of preservation. The only artifacts found associated with the skeletal material were five tubular beads fashioned from the wing bones of some fairly large bird.

3. Small cave in the side of the hill called Mounga, near the town of Nomuka, island of Nomuka, Haapai.

The human bones found in this cave had been so disturbed by recent vandalism that the meaning implied by their occurrence was entirely lost.

- 4-5. Anapekapeka, at Maifi, and Anafakaata, at Haasini, Tongatabu.

These two caves are floored with a fine white sand said to be foreign to the immediate vicinity. Human bones, resting on this sand, appear to be the remains of burials.

172 from Mua to the Tukutonga point east of Nukualofa (p. 18). The first
 173 account needs no comment; the second is highly improbable.
 344

172 About 50 feet southeast of Nukukaualua is a circular, round topped sand
 764 mound, 40 feet in base diameter and 3 feet high. It is the burial mound
 (368) (*faitoka*) where the common wives of the Tui Haatakalaua were buried.
 (644)

A few yards northeast of this *faitoka* is the low, oval, earthen mound
 172 where the house called *Falekilikili* formerly stood. This house served as a
 344 place where the small, black, volcanic pebbles called *kilikili*, used in decorating
 (368) grave mounds, were sorted and oiled previous to use. Ordinarily this house
 [764] was tapu to every one. Only after a death in the Tui Haatakalaua family
 (644) were the old women from among the chieftain's retainers permitted to enter
 this house and perform the duties associated with it. Close to the north side
 172 of *Falekilikili* was a shallow, funnel-shaped well where the old women
 312 washed their hands after oiling the *kilikili* stones.

The inlet from the lagoon is now nothing more than a small mangrove
 172 swamp, but anciently it is said to have contained sufficient water to permit
 133 large, double-hulled sailing vessels to enter and anchor. Traces of stone
 172 work about the edges of this swamp suggest that the channel was at least
 503 partly artificial. The stones seen are dressed coral slabs, generally showing
 only their tops above ground at the swamp edge.

In the center of the inlet, opposite the *faitoka*, there is a small island
 172 called Vakaniua. It was at this island that the sailing vessel of the Tui
 (133) Haatakalaua was moored when at the home port. The island derived its
 (504) name from the boat, the name being progressively handed down from one
 boat to its successor. The original boat derived its name from having carried
 (552) the chieftain Fotofili to the island of Niuafoou, north of the Vavau group.

About 50 yards east of the house Fonuamotu stood the house called Tuku-
 172 motafa, the dwelling of Lauaki, ranking *matapule* (non-chiefly official) in the
 342 suite of the Tui Haatakalaua. It is now marked by an earthen *paepae* of the
 644 usual shape with its major axis about 35 feet long.
 (362)

About half way between the house of the chieftain and that of his ranking
 172 *matapule* was the chieftain's bathing place, called Malama. It is a funnel-
 312 shaped, circular basin about 20 feet in diameter, said originally to have been
 (368) one "fathom" deep but now not more than 2 feet deep and quite dry. It is
 not known whether the bath was naturally supplied with water, which would
 necessarily be brackish, or was filled with rain water from the roofs of the
 houses, said to have been the source of supply of many of these bathing
 places.

172 The cemetery of the Tui Haatakalaua lay inside the ancient shore line.
 764 It now consists of four stone-walled burial platforms, collectively called
 (368) Loamanu, a name derived from the largest of the burial structures. (See
 p. 58.)

172 feet in length by 20 feet in maximum width. The god of that place was
346 Taliaitupou, or Kaliaitupou.

172 About 50 yards southwest from this god-house once stood the structure
342 called Matangipuomai, the *falefakautangata*, or sleeping house of the oldest
644 son of the king, while unmarried, and of the selected group of young men
[362] comprising his princely suite. As the site is now occupied by a wooden
dwelling of European type, nothing could be determined regarding the size
or orientation of the original house.

The site of the *falefakaufefine*, the sleeping house of the oldest, unmarried daughter of the king and of her young maiden attendants, could not be located nor its name ascertained. It is thought to have stood north of the king's house.

The *falehau*, the guest house of the king, was the largest house in Mua, reputed to have been equipped with eight large houseposts. Nothing remains but the mound, of which the major axis, extending northwest and southeast, is 80 feet in length; the maximum width is 50 feet. Its specific name is said to have been Tatakamotonga. According to some reports, it occupied the center of a grassy area, a *malae*.

172 Outside the walls of Mua, east of the district called Tatakamotonga, there
361 was a large area called Ahau (literally, of king), which seems to have been
644 an outside addition to the lands of the reigning Tui Kanokupolu. The only place of chiefly importance located here, however, in so far as could be determined, was Kikiloi, a god-house of the Tui Tonga where the priest
172 Kautai is said to have officiated for the god Taufaitaha. Cultivation has
346 changed the house-mound to such an extent that it was impossible to determine its size and orientation.

172 With reference to the age of Lapaha, the feature shown on the map as
133 the former shore line is of special interest. A survey of this old shore
361 terrace leaves no possible doubt that it once constituted the margin of the lagoon. Its chief archaeological importance lies in the fact that the ends of the moat surrounding three sides of Lapaha, terminate abruptly at this line. This seems to indicate that this was the true shore line at the time the fortification was built. The people of the district say that the strip of low-lands between the former and present shore lines was artificially built by one of the ancient Tui Tonga. The fabulous ship *Lomipeau* is said to be buried somewhere under this fill. The undertaking of reclaiming land on such a scale, without any apparent need for it, is too large to seem probable.

Dates depending on genealogies are bound to be inaccurate, but must serve where no other convincing data are obtainable. Allowing 30 years to a generation, Lapaha became the seat of the Tui Tonga about the last of the eleventh or beginning of the twelfth century. The fortifications around

EXCAVATIONS

LOCATIONS

172 Available sites for archaeological excavations in Tonga are of two kinds,
 114 old burial places and kitchen middens. The burial places, though plentiful
 [769] enough, are so definitely remembered in the folk history of the people that,
 to their minds, excavation would be no less objectionable than the desecration
 [121] of a modern cemetery. The kitchen middens are so few in number and
 represent such small accumulations of debris, both in area and in thickness,
 that only the determination to leave no possible source of information un-
 touched made their investigation desirable. In the end, the discovery of
 pottery alone justified the amount of time and energy expended.

Exceptional conditions permitted the opening of five old burial places. One *faitoka* on the island of Motutapu and two langis on the island of Tongatabu were deliberately opened. One unknown *faitoka* was entered in excavating what was reported to be an old god-house *paepae*, on the island of Pangaimotu. The fifth burial place was accidentally uncovered in excavating a kitchen midden at Nukualofa.

The kitchen middens excavated are: 1 at Nukualofa; 1 on the island of Pangaimotu; 2 in caves on the island of Eua; 1 in the town of Mua; 1 on the island of Motutapu. All of these are in the Tongatabu group; no kitchen middens of any description rewarded the search in the Haapai and Vavau groups. The results of excavations are included in the following brief descriptions.

PANGAIMOTU SITES

KITCHEN MIDDENS

133 The island of Pangaimotu, situated about $2\frac{1}{4}$ miles northeast of Nukualofa, has an area of less than one square mile, and a maximum elevation of about 15 feet. Although uninhabited, the island supports several very productive yam and fruit gardens, cared for and harvested in season by inhabitants from the main island.

133 On the southwest coast of the island, the sea has encroached upon the land to produce a perpendicular, earthen bank above the beach line, 2 to 6 feet in height and several hundred feet in length. Inland from this exposure, the land surface dips downward, indicating that the sea has cut in to the very center of the original embankment. The foundation of the mound seems to have been a sand dune. The upper strata, to a varying depth, are composed largely of ash, charcoal, marine shells, and burnt coral rock. Near

172 were particularly fragile. No artifacts of any kind were found with the burials,
764 although a dark discoloration of the sand immediately surrounding each burial may have
been caused partially by the decay of perishable materials placed with the dead.

172 There can be no doubt that the surface of the mound was covered with
a layer of kitchen refuse, thus confirming the statement that the mound was
[252] at one time the site of a god-house, the dwelling house of a priest. Cooking
was never undertaken in Tonga within the house, but the mound was suffi-
ciently large to accommodate both house and cooking place. The condition
of the ovens indicates that they were not used at a very recent date.

It is equally evident that the body of the mound constituted a burial place.
All facts point toward a rather primitive interment. The condition of the
skeletal material was comparatively good, in spite of a wet climate conducive
to rapid decay. The position of the burials above the level of the surround-
ing land, and the sandy material surrounding the bones, combine to establish
ideal drainage conditions and to favor long preservation. There were no
signs of intermingling of the kitchen refuse with the clean sand body of the
mound. A sharp line of demarkation extends between the two elements
throughout the excavated area. The fact that the burials preceded the deposit
of the surface stratum is emphasized by the occurrence of an earth oven
directly over two of the skeletons.

If the traditional account is to be credited, the surface deposit of the
mound had been completed previous to the middle of the nineteenth century,
but nothing positive can be said concerning the age of the bottom of the
[262] kitchen deposit. Such deposits may accumulate rapidly in Tonga, owing
[354] not only to the great number of marine shellfish eaten by the natives, but
more especially to the fact that the coral oven-stones had to be replaced after
two or three bakings. On the other hand, examination of a kitchen midden
on this same island (p. 102) produced evidence that a very thin deposit of
such refuse could represent an appreciable passage of time.

The question arises as to the length of time elapsing between the last
burial and the erection of the god-house. In consideration of the great
respect shown by the Tongans towards the dead, it is hard to believe that even
a god-house would have been built upon a known burial site. This considera-
tion suggests that the house was not built until the inhabitants ceased to
remember the mound as a place of burial and, therefore, the interments
appear to have been at least prehistoric. According to Sullivan (21), the
bones are Polynesian in type. The pottery found in this mound is discussed
on pages 115-116.

EUA SITES

133 The island of Eua, ten miles southeast of Tongatabu, is 30 miles in cir-
cumference and more than 1000 feet in maximum height. On the northwest

coast of the island, just north of the village of Ohonua, a fresh-water stream flows into the sea. Its high precipitous banks are composed of coral limestone and pitted at intervals with caves. Two of these caves have floor deposits of refuse very rich in ash and charcoal which proved well worth investigation. 133 172

1. Cave on the north side of the stream, close to its mouth. The natives who were consulted knew of no name for the cave, nor of any one who had lived there, cooked there, or used it for other purposes. The cave offered little room for any activity.

The orifice of the cave is but 4 feet high, about 10 feet wide, and decreases in size as it recedes horizontally into the cliff for a distance of 8 to 9 feet. However, it offers good shelter from the wind, sun, and rain, as the cliff above the orifice leans out protectingly, and on either side of the cave the cliff extends seaward for a short distance, leaving the site exposed in but one direction. The cave faces somewhat west of northwest. The north side of the cave floor consists of a rocky shelf. The south side is dominated by a perpendicular crevice, 3.9 feet in width at the mouth and gradually narrowing towards the back of the cave. This crevice, to a depth of 3.7 feet, was entirely filled with kitchen refuse, the deposit resting upon yellowish gravel of natural origin. Excavation of this deposit produced nothing indicative of European contact. Many marine shells, a few bones of fish and small land animals, and twenty-two small pieces of primitive pottery were found (p. 115). These were well scattered from top to bottom of the deposit, but were more numerous near the bottom; thus, thirteen of the sherds were found in the bottom 14 inches. 172 133

The smallness of the cave argues against its use as a dwelling place. On the other hand, just such caves are still in use in Eua as kitchens, or cooking places. The protection afforded against wind and rain favors such use. In all probability, this cave was a kitchen. 343

That no indications of contact with European culture were found in this deposit indicates a comparative plentitude of pottery preceding European contact.

2. Cave on the south side of the stream, nearly opposite Cave 1 and almost within the limits of the village of Ohonua. Cave 2 bears the name Anatuli (Cave-of-refuge). This comparatively large cave faces north, its floor being about 15 feet above stream level. From its orifice, 33 feet wide, the cave expands somewhat near its center and contracts again at the rear, and is 8 feet in height at the center of the arch. The floor has a maximum horizontal depth of 26 feet, its outer edge merging into a steep decline, or wash, which ends in a flat terrace 5 feet below. The more or less level surface of the floor is uniformly discolored from an abundance of fine charcoal, or soot. Old residents of Ohonua accounted for this discoloration by the fact that, within their memories, the cave had been extensively used as a place where *tuitui* nuts were burned for the purpose of obtaining soot for use as a color pigment. 172 133 172 386

- 172 Two vertical pits were sunk in the floor of the cave to depths of 3.1 feet
121 and 3.2 feet, respectively. Bedrock was encountered. The first shaft was
3 feet by 3.5 feet square, the second was 2.2 feet wide and 8 feet long.
Both excavations may be described as a unit.

- 172 A hard surface layer, about 0.7 foot thick, is very rich in carbonaceous materials.
Below this is a loosely packed mass of earth, 2 to 2.2 feet thick, very rich in whitish
ash and burnt coral oven-rock. It rests upon a thin layer of yellowish gravel, which
in turn, rests upon bedrock. The entire formation is horizontally stratified. The top
layer contained many carbonized shells of the *tuitui* nut, a few bones of fish and of
small land vertebrates, and a few scraps of iron of undoubted recent source. The
thick under-layer produced, besides quantities of oven-stones, many marine shells and
a few bones of fish and of small land vertebrates. A small potsherd was found 2 feet
below the surface, near the bottom of the deposit. No other artifacts were found.

As for Cave 1, the data for Cave 2 are meager, but tend to establish a
line between the period of intensive pottery use and the period of contact
with European culture.

MOTUTAPU SITES

BURIAL PLACES

- 133 The low island of Motutapu, about 2 miles north of the eastern end of
Tongatabu, is about one-half mile in length, and one-quarter mile in width.
166 The present native inhabitants are not descendants of the former Motutapu
people and, therefore, know nothing of the traditional history or mythology
of the place.
172 Near the center of the island, close to the southeast shore, was found a
circular, flat-topped earthen mound 55 feet in diameter at the base, 43 feet
in diameter across the flat top, and 3.5 feet high, giving the sides a slope
of about 30° (fig. 47, b). The surface of the mound appeared to be a mix-
ture of sand and dark, loamy soil. Around the margin of the flat top,
forming an outlining circle, is a series of flat, coralline slabs, irregularly
spaced, roughly dressed, each planted in a vertical position. Some of these
stones stand only a few inches above the ground. They average 0.5 foot
in thickness and a little more than 1 foot in length. The largest is 1.9 feet
in height, 2 feet in length, and 0.6 foot in thickness. Excavation started
172 at the central top of the mound soon discovered the upper edges of what
764 proved to be a stone burial enclosure (fig. 47, c).

The burial place consisted of a dozen rectangular, coral slabs set up vertically on
edge to form a six-sided, somewhat coffin-shaped compartment. The two parallel ends
of this compartment are, respectively, 5 feet and 4.5 feet in length and are placed
8 feet apart. The sides form a slight outward angle in connecting the two ends. Ends
and sides are 0.5 to 0.6 foot thick. The horizontal plane defined by the tops of these

Proverbial Sayings of the Tongans

By E. E. V. COLLOCOTT AND JOHN HAVEA
TUBOU COLLEGE, TONGA

INTRODUCTION

PRELIMINARY REMARKS

The Tonga Islands or Friendly Islands consist mainly of 101 low coral islets, the largest, Tonga or Tongatabu, being about [133] 25 miles long from east to west, and rather less than half that distance in width at its broadest part. The group is divided into three well-defined smaller groups: Tongatabu and Eua with a cluster of surrounding islets to the south, the widely scattered Haapai archipelago in the center and Vavau to the north. Far to the northward of Vavau are the outlying islands of Niua Foou and Niua Tobutabu (Keppel's).

The majority of the islands in the Tongan group are low-lying and level, but notable exceptions occur. The surface of the island of Eua which rises in two great tiers to upwards of 1000 feet is marked by splendid rolling uplands and rugged cliffs. The imposing cone of Kao, the highest mountain in the Tonga Islands with an altitude of more than 3000 feet, and its longer and lower, but still lofty, neighbor, Tofua, form the western sentinels of the Haapai group. Farther north is the cone of Late. Vavau with its surrounding islands is hilly and picturesquely wooded. Niua Foou is also high and volcanic; Niua Tobutabu, and the neighboring peak of Tafahi, are each about 2000 feet high.

This widely scattered group is inhabited by a homogenous people speaking one language. It is asserted that formerly there were notable peculiarities in the speech of Eua and Niua Foou, and at the present day words not found in the remainder of the group are in use in Niua Foou. These differences, however, are not very considerable.

The suggestion that a collection of popular sayings should be made came first from the late Rev. Dr. George Brown, the

151 [p. 39]

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has succeeded in seizing it. Generally of one who has had a narrow escape. 539
To be exposed to danger (Baker). 501

276. Po fakafitaa uli: Night, persisting through difficulties (with) 539
steering. 502
461
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Literally applied to a boat making her way through storm and darkness; the steering of the vessel is rendered extremely difficult but the sailor sticks bravely to his task, and in spite of difficulty and peril, the vessel holds on her course. Applied generally to hard, arduous tasks, especially with the idea of going through with them, refusing to be daunted.

277. Punufuu hage ha fuu vaka Vavau: Obstructing like a great 539
Vavau boat. 133
183

It is said that a boat coming from Vavau to Haapai was unlucky enough to run on one of the reefs there blocking the opening which was the entrance to the anchorage at that spot. The expression is applied, for example, to one who enters a room and plants himself down in front of the door.

278. Ta e lango kei mamao: Cut the slips still at a distance, that 539
is, when the occasion for its use is still at a distance. 504
183

Lango, rendered here by slips, is a timber for raising anything on like the timbers on which a boat is pulled up out of the water or launched. The slips on which a boat is launched is probably the timber specifically indicated in this expression. The meaning is to have the preparations for launching all made beforehand so as not to waste time about it when the day comes to put the vessel into the water. Generally, to prepare well ahead for anything.

279. Takanga a tongiaki: A tongiaki in company. 539

The tongiaki is one of the old sailing canoes of Tonga, not so large or seaworthy as the more familiar kalio. A couple of these canoes might sail 501
along in company in fair weather but if a storm sprang up neither could 502
rely much on the other for assistance. They had neither the size nor the 572
qualities to make them very serviceable companions in distress; in fact each 571
would be hard enough put to it to secure her own safety. So used of fair-
weather friends.

280. Takanga enau fohe: Mates (at) their oar; perhaps, their 539
oars are mates. 461
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The Tongan sailing canoes had two, sometimes three, steering oars. In calm weather one man apiece sufficed for these oars but in storm more would be required. This phrase indicates that the men at the oars, whether one at each or more, are well matched in skill and so the steering is done well and harmoniously. Men who are all capable workmen laboring together and carrying out their task ably and agreeably.

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cabulary this phrase seems out of place in Tonga, a country almost entirely without running water. 539
823
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328. Tafe jino i vai: Perhaps flowing as a body of water.

Pratt (Grammar and Dictionary of the Samoan language), translates *tafetinoivai*: "to flow in the river bed." It is used in Tongan of that which is manifestly good and may indicate a distinct, clear-flowing, volume of water in contradistinction to scattered streamlets. Except for a few tiny rivulets in Eua the Tongan group is without surface flowing water, and so such an expression would seem to have originated in Eua, or, perhaps more probably, to have been brought from Samoa. [177]

329. Ta jino-i-vai: Cutting out body of water.

Water making for itself a channel, and becoming a manifest body of water. Like the preceding, this expression is applied to that which is clean, unsullied, as well as to that which is manifest.

330. Tuutuu mounga: Standing (on) mountain.

Applied to one who is out of reach by reason of rank or the protection of those of high rank. 539
823
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GEOGRAPHIC LOCATIONS

TONGATABU AND EUA

[Tongatabu the chief island of the group, and the seat of Government. 131
It is one of the most southerly of the Tongan Islands. On its southeast 133
side is the high and beautiful island of Eua, separated from Tongatabu by a narrow but very deep strait.]

331. Hange ko Manaki: Like Manaki.

Manaki is a high towering rock in the island of Eua, and is a very prominent feature in the landscape. Used of that which is obvious. (Compare No. 252.) 539
823

332. Hange koe Matafota: Like Matafota.

Matafota is a place in the sea between Eua and Tongatabu, which has passed into a proverb for its roughness. (See No. 342.)

333. Koena pe he Tuatoi: Tuatoi is just over there.

Tuatoi is a place in Eua at a considerable distance from Ohonua, the chief centre of population. Used in an ironic or deceptive way to one who asks how far a place is away. The one inquired of may just point in an offhand way and say, "Oh, Tuatoi is just over there," but when the one who asked comes to walk the distance he will find that he has a long way to go.

539334. *Nukualofa fakahaheheke*: Flattering Nukualofa.

103

The name Nukualofa, applied today to the large village which is the capital of the modern Kingdom of Tonga, had formerly a much more restricted application. Speaking generally, however, it is said that this part has been called successively by the names Maufanga, Nacua, Nukualefa, and Nukualofa. Of the last two, Nuku-alefa means Hungry-place, and Nuku-alofa, Kindly-place. Flattering Nukualofa is used derisively with the imputation that the expression of "Kindly-place" is mere flattery used to procure food for Hungry-place.

539335. *Taka Tongatapu tae i Eua*: Going about in Tongatabu without being in Eua.

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The island of Eua although close to Tongatabu is inconveniently situated for coming and going with the prevailing winds; the trip one way is frequently easy but sometimes several days elapse before a sailing boat can make the return passage. Consequently comparatively few people visit Eua. One may live for years in Tongatabu or a stranger may go through Tongatabu from end to end and yet not include Eua in his itinerary. (See Nos. 350 and 352.)

539336. *Toka i Maananga*: Lying (beforehand) in Maananga.

787

Maananga is the name of the home of the chief Loau who plays so great a part in Tongan legend. He was a seer who resting quietly at home was able to see all that was going on elsewhere, or at least a great deal of it. People might purpose to carry out a project and set to work on it, but it was all known to the chief in Maananga, the whole thing lay exposed to view in Maananga. This expression, written as one word, is commonly used of omniscience in Christian worship.

539337. *Tonga mounga ki he loto*: Tonga's mountain is in its heart.

823

This is said to be the reply of the Tongatabu people to the people of Haapai and Vavau, when taunted with having no mountain in their island. [873] The phrase has been very happily adopted by the late Rev. Dr. Moulton as the motto of the Tubou College, of which he was the founder. Dr. Moulton has of course applied its brave language to the whole of the Tongan group, inclusive of Haapai and Vavau. If this account of the origin of the expression be correct it bears interesting testimony to the isolation of Eua from Tongatabu. Eua is not as high as Tofua or Kao, the two mountainous islands of Haapai, but it is certainly very high land in Tonga and is much closer to Tongatabu than Tofua and Kao are to the main part of the Haapai group, which is in general very low. Moreover, the population of Eua has probably always been greater than that of Tofua and Kao. The people of Eua, although only a few hours' sail under favorable conditions from Tongatabu seem in general to have lived a life of their own, though by no means one always of peaceful monotony.

539338. *Uakai pea alu ki Fuaamotu*: Hungry, then go to Fuaamotu.

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Fuaamotu is a village in the eastern part of Tongatabu, a place that to a great number of the inhabitants of Tongatabu seems and actually is

Collocott and Havea—Tongan Proverbs

101

at a considerable distance from their own homes. It is moreover a high chiefly village; and therefore a likely place to obtain food. There is a double reference in this phrase; first, that one is so hungry that he is willing to go a long way to obtain food; second, that in going to Fuaamotu he is going to a good place to get it. 539
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HAAPAI

[Haapai is the central portion of the Tongan group, lying almost midway between Tongatabu to the south and Vavau to the north. It is a widely scattered archipelago, consisting almost entirely of low coral islands.] 131
133

339. *Afa kai fai ki Haa-Ngana*: A great talk about food after the Haa-Ngana way. 539
829
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Haa-Ngana, the tribe of Ngana, is found in three small islands in the Haapai group. What might be reckoned a great thing in these small islands is not necessarily of such dimensions as to appear worthy of special comment to the inhabitant of a larger place. Much ado about nothing.

340. *E seen ae namu Nomuka*: Nomuka mosquitoes will be driven away. 534
825

The island of Nomuka, one of the southernmost of the Haapai group, is deservedly famous for its mosquitoes. The expression is used for that which is very difficult. It is easier to keep the mosquitoes off oneself in Nomuka than to do so-and-so. (Compare Nos. 370, 358 and 133.)

341. *Foa ulu efu*: Foa dusty head.

This is an abusive epithet applied to the people of Foa in Haapai. It makes a Foa man angry and does not seem applicable to any peculiarity discoverable today in the people or their island, which is large and very fertile. A story is told which refers the origin of the expression to a combat between two chiefs of Foa. One hit the other on the head with his club and made a cloud of dust fly out. It is also said the yams in Foa have large heads with plenty of room for the dirt to lodge when they are dug up; but this strikes one as being rather the finding of fresh cases to which to apply the abuse than the explanation of its origin. 539
578
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342. *Hange ko Fakatoutoa*: Like Fakatoutoa.

Fakatoutoa is a place in the sea near Nomuka, in the Haapai Group, where rough water is frequently encountered. Used proverbially of rough seas. (See No. 332.) 539
823

343. *Hilinga mo Tolu koe motu tokanoa*: It becomes Tolu, an island that lies right out of the way.

Tolu is a small group of islets lying at a considerable distance from any other portion of the Tonga Islands and is, moreover, rather inaccessible and out of the usual track of boats. The expression as it stands, is elliptical. 183

Collocott and Havea—Tongan Proverbs

103

canoes used to go there for fishing. The expression is used generally of a long voyage to reach a reef. 539
823

349. Manako maka fai ki Tofua: Wishing for rock in Tofua. 539

Volcanic stones and pebbles from Tofua are highly valued for several purposes, but Tofua is far from most of the inhabited islands, the anchorage is bad, and contrary winds are frequently met with, especially in returning. Wishing for stones from Tofua, therefore, is to desire something that is worth having but difficult to obtain. 823
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350. Taka Haapai tae i Tofua: Going about Haapai without being in Tofua. 539
823
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The meaning of this is similar to that of No. 335, the volcanic mountain of Tofua being as inconveniently situated with respect to the main portion of the Haapai group as Eua is with respect to Tongatabu. (See also No. 352.)

VAVAU AND NIUA FOOU

[Vavan is the most northerly of the Tonga Islands with the exception of the outlying islands of Niua Tobutabu and Niua Fooou. Vavau is high and picturesque and possesses an exceedingly fine harbor. Niua Fooou is about midway between Vavau and Samoa.] 131
133

351. Kai pe e Ngaunoho ae fua o enau gaue kovi: Ngaunoho is merely eating the fruit of its ill deed. 539
823

As a proverb this is one of the many expressions found scattered throughout the world which warn erring mortals that they must reap as they sow. Ngaunoho is a village in Vavau, and is said to have been once a flourishing place but to have fallen from its old prosperity through having offended its chief. Its present decrepitude is the fruit that it has to bite on. 622
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352. Taka Haafuluhao tae i Poujini: Going about in Haafuluhao without being in Poujini. 539
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Haafuluhao is a common name for Vavau, the northern part of the Tonga Islands. Poujini is a small islet near Haalaufuli in Vavau which is not often visited. This is similar to Nos. 335 and 350.

353. Tala kei i Kapa: Tell still in Kapa.

Kapa is an island in Vavau, lying close to the island of Mala. The route from Kapa to the mainland lies through Mala, where once dwelt a formidable cannibal man or demi-god. Warnings should be given or preparations made in Kapa before passing on to Mala, where one was in deadly peril. Used generally of taking time by the forelock, making all preparations to meet danger before one is actually involved in it. 539
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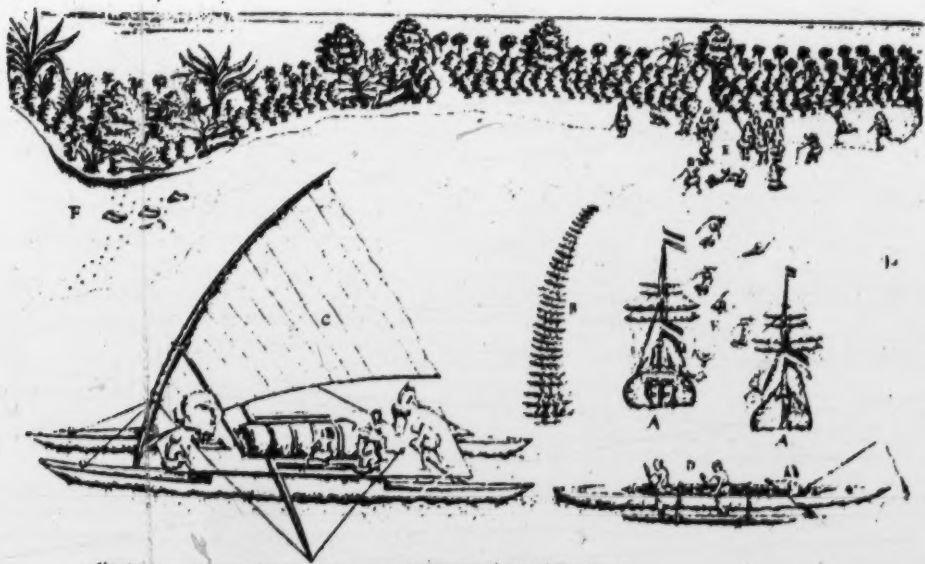


FIGURE 190.—Tongan *tongiaki* seen off Tongatabu in 1643, masthead crutch-shaped, two steering paddles in action; right, bonito fishing canoe (*tofo'anga*), fishing rod correctly shown behind utmost paddler (after Tasman, 1648).

10: Hornell E.N-4,5 (1925) 1936 0U9 Tonga 0U9

Tongu Archipelago

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12: Vason M-3 (1797-1801) 1810
009 Tonga 009

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122 but Tongataboo being our object, we stood down
175 the channel in full sail, without attending to them.

609 About ten, the vessel passed an Island, and as it
drew nearer Tongataboo, we discerned the natives

122 flocking down to the beach. The channel was
175 deep and commodious: it narrowed as we advanced
193 up it, and at length, terminated in a small winding
turn, round a point of land, which we doubled
with difficulty.

[609] From a small Island that lay near, we were cheered
by the natives. In a quarter of an hour, the ship
was through the channel, and in an hour after, dropped
down into a convenient place for anchorage.

[609] Before we could well come to an anchor, the ship
was surrounded by the natives, who flocked to us
from every adjacent Island. The place, before
which we anchored, was called Noogollefa: it was
near an Island, named Bonghy-moddoo; on which
former navigators pitched their tents, as a convenient
spot, on account of its separation from the main
Island, to preserve themselves from being too much
incommoded by the natives.

122 We had not been long at anchor, before we were
175 pleasingly surprised by a visit from two Europeans,
563 named Benjamin Ambler, and John Conelly. The
former said, he was a native of London, the latter, an
Irishman, said, he was born at Cork. They stated,
that they left an American vessel, that came here, preferring
to take up their abode at Tongataboo. But

175 the canoe. Anxious for the rest of the brethren,
727 who escaped the slaughter which their companions
669 at Ardeo met with, and who had fled and conceal-
[124] ed themselves, as it was supposed in rocks on the
sea-shore, I made particular inquiries respecting
them.

I learned, that at the time the war broke out, Shelly, Kelso, Wilkinson, and Buchanan lived together, or near each other, at Ahcefo, under the protection of Dugonagaboola. I heard also that Cooper, who took up his residence with Moola, an inferior chief, at Ahogge, had fled to them for protection. For one day being left alone in his apartment, the natives broke in, and plundered him of every thing, and threatened to kill him. He begged hard that they would spare his life, but told them they were welcome to take all his property.

When Dugonagaboola, under whose protection they all lived, was killed in the treacherous manner which has been related, (in the thirteenth chapter) they were all taken under the care of Komavai, who was a deputy chief under Dugonagaboola. He was always a kind friend to us, and we were all much attached to him. But as soon as two parties were formed, and their friends, the Ahcefans, marched to fight Loogolala and his party, then they fled to the
[132] back part of the island. This they could easily do, without molestation, as the island, in some places, was not above six, in others only four, and even two
1 [i.e. Tongataboo--Analyst]

AN AUTHENTIC NARRATIVE.

183

miles in breadth; while, in length, it was upwards of twenty-six miles. I cannot, however, from my own knowledge, ascertain its proper extent, having been often much deceived respecting the relative distance of places, through the pain and fatigue of travelling barefoot: the natives never using any protection for the feet, in the form of bandage or sandal, and my own shoes being soon worn out, or stolen by the natives, who, though they knew not the use of them, yet as belonging to us they conceived they must be valuable. 175 179 664 133 481 291

I recollect travelling a whole day in company with Harper and Futiafaihe, to see Duatonga at Moos, but walking barefoot, I was so fatigued and pained that I thought it must be at least thirty miles, but, upon inquiry, I found it to be only seventeen.

When the war terminated with the subjection of the Aheefans, by the party of Loogolala, and we had retired to Arbai, the five brethren returned to Aheefo, and put themselves again under the protection of Komavai, with whom I understood they now resided. 175 179

I had some intention of visiting them, but I understood that an European vessel was off the island. I immediately hastened to the beach and went on board. It was an English ship with a spanish prize in her possession: she had put in here for provisions, by the persuasion of John Harris, who was on board. He had settled at Otaheite after he had

13: Beaglehole & Beaglehole E-5 (1938-1939) 1941

OU9 Tonga OU9

Vavau
Pangai

6

PANGAI: A VILLAGE IN TONGA

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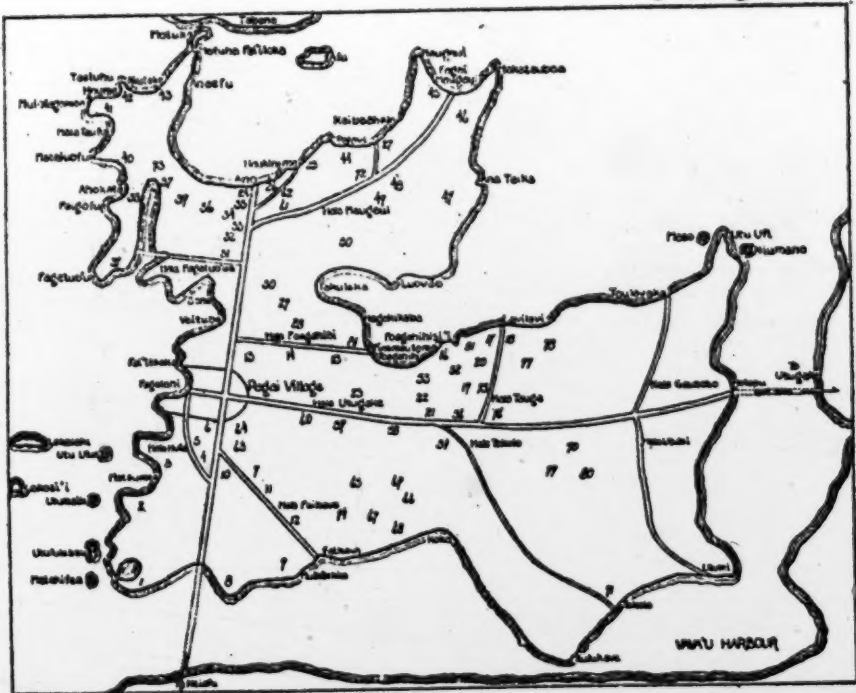


FIG. 1.

Sketch map of the island of Pangaimotu showing the location of Pangai village (here spelt Pangai), principal roads (Aala) giving access to the plantations, together with main place names. Numbers indicate location of the plantations controlled by the villagers of Pangai.

THE VILLAGE OF PANGAI

LOCATION AND CLIMATE

OF the three island groups into which the modern Kingdom of Tonga is divided, that of Vava'u is northernmost. The position of its chief village, Neiafu, is 18° 39' south, and 173° 59' west. Three-fifths of the land area of this northern group is in the one island, 'Uta Vava'u. The remaining islands are separated from the mainland by narrow channels, some of them fordable at low tide. The island (see Fig. 1) on which Pangai village² is situated, Pangaimotu,³ lies directly across Neiafu harbour. The nearest landing-place to the village may be reached by launch in a half hour. By land, it is about a two-hour walk from Neiafu to Pangai along an ill-kept bush track that is officially graced with the title of "road"; the distance is covered in half this time by horse. The ford between 'Uta Vava'u and the island of Pangai may be crossed by horse or on foot at low tide, by horse only—and then with considerable difficulty—at high tide.

² Pangai is a fairly common place name in Tonga. It means "meeting place" or "gathering place" and was formerly applied to the permanent or temporary residences of the Tui Kanokupolu or his agents. As noted below, the island of Pangaimotu is a royal estate. The Queen of Tonga is the present holder of the office of Tui Kanokupolu. We have no data however, as to the specific time or occasion in the past when the island and the village received their name, Pangai.

³ Perhaps a note should be added at this point on orthography. The orthography to which the early Wesleyan and Roman Catholic missionaries reduced the Tongan language and which is in current usage at the present time, is most peculiar. It consists of five vowels and thirteen consonants. The vowels are the standard Polynesian vowel sounds. In the consonantal system however, both *b* and *p* are used for the intermediate Polynesian sound between *p* and *b*; *t* and *j* are also used as if for separate sounds, though referring to a dental *t* sound that is sometimes palatalized before certain vowels. The front palatal nasal *eng* sound is symbolized by *g*. The student has his choice between using an irrational but customary and specifically Tongan orthography on the one hand and, on the other hand, the more widely used standard Polynesian orthography. For the place-names and proper names on the two sketch-maps we have kept the

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 (131)
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The island of Pangai has a greatest height of 290 feet and a total area of 2,188 acres. All the island makes up one of the royal estates. There are two villages, Pangai and Utulei. In 1931 their populations were given as 250 and 104 respectively.⁴ The division of acreage between the two villages is roughly indicated on the island map (Fig. 1).^A

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Because the principal economic activity of the villagers is gardening and cultivation of root crops mainly, a note may be added on soil and climate. The following information⁵ refers specifically to 'Uta Vava'u but there is no reason to think that it does not apply equally well to the island of Pangai. The islands are of a coral-formation on a volcanic base. The soil is rich and fertile. The climate is sub-tropical with a humidity in mid-summer that is severe and which has a year-round mean in Neiafu of 77 per cent. The rainfall is fairly heavy with a wet season from December to April and an occasional short but injurious drought between October and December. (Rainfall range in Neiafu, 68 to 103 inches, mean of 82 inches.) The soil of the island is very porous and water may be obtained easily by sinking a well. Today however, the villagers rely on concrete cisterns to obtain water for drinking and domestic purposes. The number and location of these cisterns in Pangai village is shown on the map (Fig. 2).^B The prevailing winds are the south-east trade-winds. During the rainy season, hurricanes are an ever-constant threat to the villagers. Only occasionally do these hurricanes occur with disastrous effect. Every year however, the possibility of hurricane means an ever-recurrent anxiety. A hurricane does great damage to the gardens and cultivations and generally means food-shortage for many months thereafter. Even strong winds of less than hurricane force may cause great damage if they

[TEXT CONTINUED ON PAGE 10]

(104)

Tongan orthography. No confusion need arise: it should be obvious that the village of Pagai on the map is the same village referred to as Pangai in the text. It is hard to answer the very natural question as to why we use these two orthographies thus, instead of one only. Presumably we think the Polynesian system more correct than the Tongan system although we would feel guilty if we tampered with the standardized spelling of place-names on a map.

⁴ According to our household census, the population of Pangai in December, 1938, was 268 (see p. 69).

(113)

⁵ From Wood, A. H., *History and Geography of Tonga*, Auckland, 1938, pp. 85-86.

^A, [See category 116, p. 6--Analyst]

^B, [See category 116, p. 9--Analyst]

13: Beaglehole & Beaglehole E-5 (1938-1939) 1941

009 Tonga 009

Vavau
Pangai

PANGAI: A VILLAGE IN TONGA

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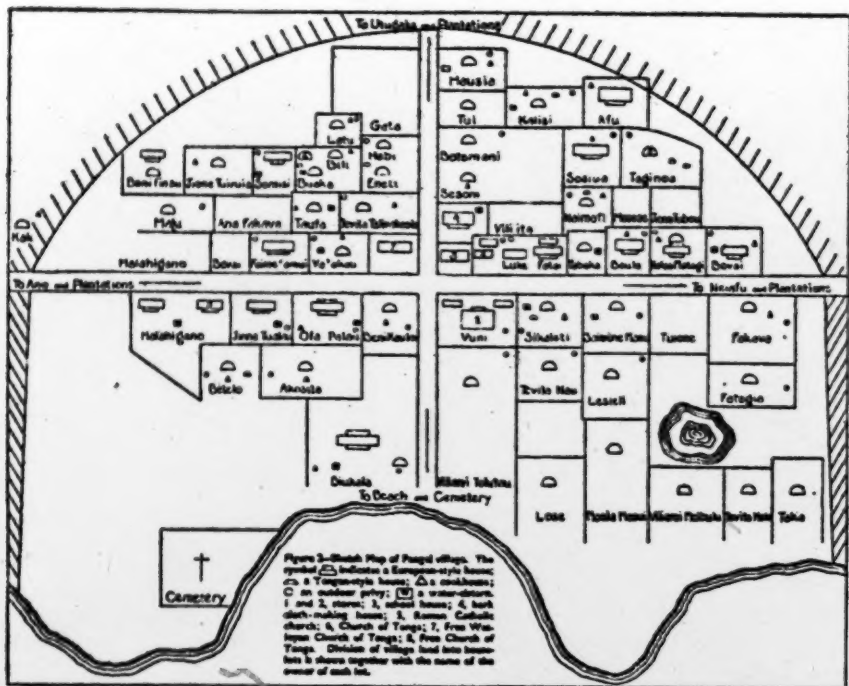


FIG. 2.

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13: Beaglehole & Beaglehole E-5 (1938-1939) 1941
OU9 Tonga OU9
Vavau
Pangai

PANGAI: A VILLAGE IN TONGA

19

and 2 in Tongatapu. Those in Tongatapu do not cultivate their plantations but retain control of them as long as rent is paid. They presumably continue to pay rent because they at some time hope to return to Pangai to live. The 26 other non-Pangai residents were either at one time resident in the village or have inherited plantations from relatives. They are generally cultivating their plantations or else are using them for the production of copra. (241)

The grouping of the numbers in Figure 1^A generally follows the topography of the island. Where the numbers are close together, the land is flat, fertile and easily cultivated. Where the numbers are widely separated as at the left of the map, the land is rocky or broken or infertile. To the right of the map where there are no numbers on the island, the land is controlled by the village of Utulei.

Although Pangaimotu is Royal estate no tribute is now paid by the villagers to the Queen in the way of a first-fruits offering. When the Queen comes to Neiafu on a visit, or should she at any time pay a visit to the village, special gifts of fine mats, bark cloth, pigs and food, are made to her by the people of Pangai. On a visit to Vava'u the people would honour the Queen in this fashion. The people occupying the lands of a Royal estate, however, would expect to make gifts greater in quantity and value than the general populace.

The modern pattern of the villager's control over a small acreage of land through annual payment of land tax may superficially appear to represent a great change in aboriginal patterns of land ownership. Closer study, however, suggests that changes have not been great. The aboriginal commoner was a tenant farmer, working land granted to him by a feudal chief, paying to this chief a "rent" in produce, liable in theory to be dispossessed of his "rented" land at the will of his chief. Today, the ultimate owner of all land in the Kingdom is the Tongan government which has made land grants to Royalty and nobles. Land taxes are paid to the government representative. The Crown passes on these rents to the noble concerned if they come from his estate and keeps them for government use if the land is Crown property. The villager therefore no more owns his land today than he did in aboriginal times. A

THE PROFITS OF MARTYRDOM.

29

dressed with all her signal flags, cast off amid deafening 798
cheers from the shore party, and as she swung out into the 167
stream she fired a salute. As the echoes of the last shot [533]
died away, the voices of the exiles were heard singing
"Home, Sweet Home," in their
own language, taking well-sustained
parts; and they continued singing
until we passed through the white
line of reef-breakers, and the figures
on shore had melted away in a
cloud of white draperies. We had
cast off our nationality, and were
now Tongans.

Our fellow-passengers spent their
first day at sea in holding religious
services, and in fussing about their
luggage. These exiles for conscience'
sake had already reaped the reward
of their constancy—an earthly re-
ward in the form of mats, native
cloth, kava-bowls, and all things
that are most precious to the native
heart. They numbered more than 120, and had left
their homes almost naked. They went back with eighty
tons of luggage—far more than they could possibly have
accumulated in three years had they remained in their
own country. Persecution had not been unprofitable.

A grey fuzzy line just above the horizon, gradually re-
solving itself into cocoanut-palms—such was our first
sight of Tongatabu. We steamed along the south-east [133] ●
coast, the Liku, watching the surf spout up in a hundred



[142]
[291]
[302]

One of the Exiles.

798 geysers as each heavy sea forced the water into the cave-
167 like tunnels in the reef; between the main island and
[133] picturesque Eua; through an intricate channel among the
reef islets, until some houses showed white against the
thick mass of palms. This was Nukualofa. In the sun-

[361]



Nukualofa.

light every colour was intense
—the blue of the sea, the white
of the foam and coral-sand,
and the green of the
vegetation.

[152] From the moment
when the first land was sighted the exiles began to show
signs of anxiety, which increased with every throb of
the propeller. They got out mats from their bundles,
798 presumably in order to land neatly dressed; but, to our
167 surprise, we saw that the outer mat petticoats they
292 were putting on were impossibly dirty and ragged. Not
576 ragged enough, however, to satisfy their critical taste,
for as we neared the shore they began nervously to
tear and unravel the edges of these filthy garments,
stopping at times to inspect their progress towards
disreputability. We had yet to learn that a Tongan
expresses humility, repentance, and respect for dignities
by the raggedness of his attire. The High Commis-
sioner's advice regarding their demeanour on arrival had
not been lost upon them.

798 We were boarded by the Collector of Customs and the
167 Vice-Consul, and while we were still talking to them, two
797

IV.

HOW I FARED AT COURT.

645 At length, on August 27, Fatafehi's schooner the Malokula
505 was declared ready for sea, and I embarked with Tukuaho,
(552) Fatafehi, and Chief Clerk Mataka. The vessel was un-
pleasantly crowded with old women, whose prostrate
bodies made the traverse of the deck at night impossible.
At sunset we passed Malinoa, where lay the four men
who were shot after the attempt on Mr Baker's life.
Thence, clear of reefs, we stood on with a fair wind
through the night until we could see the glare of the
volcano of Tofua, then in eruption. After a fruitless
attempt to capture a pig at Haafeva, which wasted a
precious hour, we dropped anchor at Lifuka at nearly
133 noon. We were on the lee side of a low narrow island,
nowhere more than thirty feet above high-water mark, but
covered with grass and cocoa-nuts to the water's edge.
Other islands of the same kind stretched away to the
north and south of us. The town was a mere row of iron-
361 roofed stores on the beach: behind them could be seen
347 the usual native huts dotted about among the trees, with
351 grass growing right up to the doors, and horses tethered
here and there between them.

SOCIETY IN HAAPAL

71

which this would have entailed. The cue given by 643
Tukuaho was a useful one, and for the present I became 645
to the Tongans not a Minister of the Crown, but "*Koe
tuqata fakahinohino*" (The expounder—of the dark ways
of civilised man).

The Privy Council over, we had time to look about us.
The island at this point is barely half a mile wide: every 133
rood of it seems to be under cultivation, from the back of 311
the town to the edge of the rocks on the Liku upon which
the ocean-rollers, driven before the steady trade-wind, beat
unceasingly. The Europeans of the place live in a row of 563
stores on the beach, each hungry for copra, each fearing 366
to give the natives credit, yet not daring to refuse lest [452]
they take their custom to a neighbour; and each, when
he has given credit, mortified by seeing his debtor pass
his store to sell his copra to a hated rival. There is the
agent of the great Hamburg firm, the agent for McArthur
& Co., a free-lance or two, a carpenter, and the Customs
officer of the port, who brings up a large family on £100
a-year. The only friendships in this heterogeneous society 563
are mere alliances against a common foe, and as they are
all by instinct against the Government, and can now have
the exciting sport of setting the king against his Ministers,
there is something very like reconciliation among them.

On Sunday we went to church in a driving rain-storm, 796
but, notwithstanding the weather, the little building was
filled. The women in their native finery looked infinitely [292]
more respectable than their brothers and husbands, who
had donned threadbare coats and trousers in honour of
the day, but had stopped short of shoes. The king was [643]

PROPAGANDA BY PHOTOGRAPHS.

81

in virtue of his local rank. His office, however, seemed to place him next to the Governor in importance, for he alone can have the ordering of other men's labour without paying for it—a distinction that carries weight in every community. Tukuaho told them how much he regretted that an empty Treasury had tied his hands, so that he could not yet pay them the nine months' salary due to them on Mr Baker's departure; but he announced that from that day forward their salaries would be punctually remitted to them, and that the payment of the amount owing to them by his predecessor (he was not going to speak ill of the absent) would depend upon their own loyalty. The sooner they could induce their friends to pay their taxes, the sooner would they receive the arrears due to them. [634
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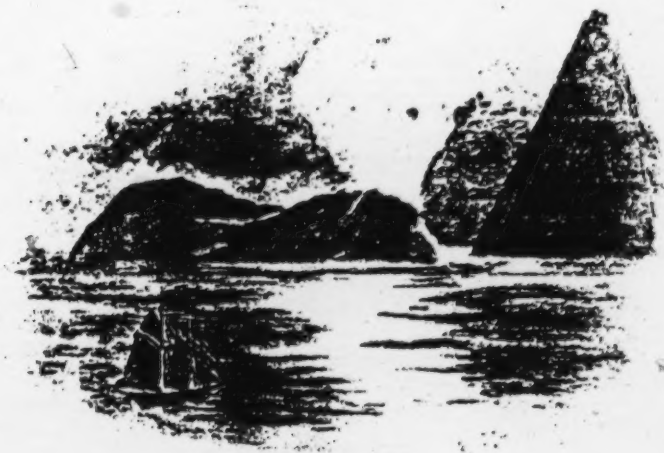
Next day the mail-steamer from New Zealand put in, after touching at Nukualofa. From the former place she brought Mr Baker's son—formerly his private secretary—carrying, for distribution among the natives, a bundle of lithographs of his father, subscribed "The Premier appointed by Tubou"; and from the latter Mr Watkin, the chief minister of the Free Church, and the staunch ally of the late Premier, ostensibly to make church collections, but also, as it afterwards proved, to further unsettle the minds of his flock. [205
797
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793]

At mid-day we set sail for Nukualofa. A chain of volcanoes traverses the Tongan group from north to south, and one or other of the craters is generally in a state of sufficient activity to be employed by one of the contending Church parties against the other. In August 1886, the sudden eruption in Niuafoou was pointed to by the [823
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133
186]

THE MUTINY OF THE BOUNTY.

83

fast. The sequel is thus told by the natives. They ¹⁷⁵
dragged the body inland to a *malae*¹ (the island being ¹⁷⁷
the property of the Tui Tonga, there are many there),
and after exposing it for three days, they buried it. But ^[823]
the whole of the track made by the body as it was
dragged along has ever since remained bare of grass,
as well as the spot where the corpse lay exposed.



Tofua in eruption.

Mariner, who visited the place in 1808, saw this track,
and says that it had not the appearance of a beaten
path. At the end was a bare place, at right angles to
the path, about the length and breadth of a man's body.

Daylight found us within sight of the "new island." ¹³³
Early in 1886 a submerged reef broke out into sub-

¹ Sacred enclosure where sacrifices were offered.

14: Thomson G-3 (1886-1891) 1894
OU9 Tonga OU9

84 THE POLITICAL USES OF A STATE CHURCH.

133 aqueous eruption. It suddenly rose, and formed an island
[186] 160 feet above the sea, composed of smoking scoria. A
question arose in Nukualofa as to the nationality of this
new land, and an enterprising expedition was despatched
to settle the matter by planting the Tongan ensign on the
summit. We found that the sea was making great havoc
of this, the latest addition to King George's dominions.
With every storm great masses of the soft pumice were
dislodged, so that in a few years the island will be re-
duced to its old form of a reef awash at low tide.

181 able than the mission primness of the Tongatabu maidens, whose discreet deportment invites suspicion.

245 From the wharf one climbs a grassy slope, and straightway one is in the orange-groves. The whole town is an orange-garden. Beneath the dark shiny foliage lie piles of rotting fruit, half-concealed by the rank couch-grass. Some of the trees are bent with their green load, others are white with blossom, for the crops succeed each other
342 with little intermission. Behind the long rows of trees nestle the brown thatched houses, set down, as it were, upon the grass like the toy cottages of a child.

● 133 There is no beach here. The shores of the inlet are steep to, and the main road runs along the edge of the cliff.

344 On this road stands the "Palace," a barn-like decaying structure of wood, from which the paint has long ago been

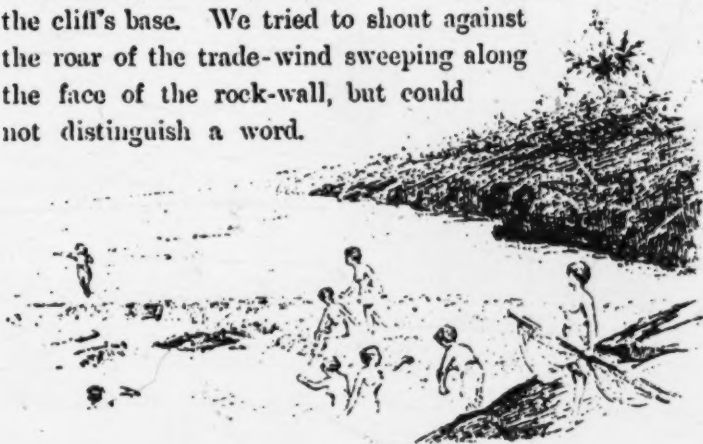
[352] washed by successive rainy seasons. Poor Laifone maintained the place with magnificence,—that is to say, there
[513] were marble mantelpieces (never paid for), cut-glass decanters, china, plate, whips, walking-sticks, boot-trees, ornaments, and saddles scattered in heaps over the furniture and floors, very dirty and in indescribable confusion; while the royal master of all this luxury slept on the floor, ate his meals with his fingers, and drank his liquor simply from the black bottle without the intermediary of a cut-glass decanter. But now even those glories have departed, and the house is empty except when the king pays a fly-

366 ing visit to Vavau. Beyond the "Palace" were the stores,
[439] built on the seaward side of the road for greater facility in shipping copra, which comes next to oranges as the chief
563 product of Vavau. These stores, kept by rival traders
441 struggling for the custom of the passing Tongans, breed by

Another, Tuabaji, after re-
sisting for years the teachings of the missionaries, brought
565 [797] about that dramatic conversion of the whole island to
Christianity that seemed to the missionaries so striking an
instance of divine interposition. The line was not extinct.
Though Manase was governor under the king, a Finau
Ulukalala lived in the person of an unwieldy nian of
thirty, a *noble* of the House of Lords, it is true, and the
king's aide-de-camp, but in all other respects ignored by
the Government. He was not a man of high moral eleva-
tion, nor could the missionaries point to him as a cheering
instance of the efficacy of their work. He swore fluently
in both German and English, and had a cultivated taste
for strong waters. Finau was a ne'er-do-weel, but perhaps
a scapegrace of the kind that is not past reform if in-
trusted with responsibility. There was no doubt about
565 554 his being the hereditary ruler of the place: one might
[637] see that from the manner of the old men as he rode
through the country. Surrounded by rowdy young boon-
companions, holding no post that gave him a vestige
of authority, he yet could not enter a village without
holding an informal *levée* of all the inhabitants, while
Manase the Governor might pass unnoticed. Possessed
of such inherent influence, he was certainly worthy of trial
as Manase's successor if the king could be induced to dis-
miss so ardent a Free Churchman, and to appoint in his
place the descendant of the chiefs whom he had dispos-
sessed. Perhaps guessing my sentiments, Finau attached
133 himself to me throughout this visit. He offered to escort
me to the Liku, and as I could best enjoy the scenery of
this weird place alone, I was at some pains to give him
the slip. But though I rode fast Finau rode faster, and

THE ROMANTIC LIKU. 171

caught me up at that strange white burying-ground, hung between sky and sea at the precipice's edge. He led me along the cliff to the open plain, whence, looking backward, one may see the hundred isles of Haafulu Hao spread out like a map. Leaving our horses, we crept together along the razor-edge that still connected a rocky pinnacle with the cliff from which it jutted. Clinging to the roots of a starving screw-pine, we knelt and felt the shaft twang as the great seas boomed into the caverns at the cliff's base. We tried to shout against the roar of the trade-wind sweeping along the face of the rock-wall, but could not distinguish a word.



The Liku in Tongatabu.

This place has been a favourite point of departure for the love-sick of Vavau who would escape their misery. Finau said that the body of a girl of Halaufuli, who leapt hence into eternity a few months before, never reached the water, but was sucked inwards by the cliff, and so dashed to pieces on the sharp rocks at its foot. Whether the attraction of the cliff would always do this or not, death would be certain in falling

57/ Years after his relations had eaten his funeral feast, in the
175 belief that he had perished in one of the numerous night
attacks of that perilous time, he was accidentally dis-
covered by a party of girls who had wandered hither in
search of scented flowers for garlands, and here the great
Finau sought an interview with him and tempted him
with the promise of land, slaves, and wives if he would
return to the life he had left. But he refused them all,
and died as he had lived, alone and unheeded of the few
who remembered his existence.

133 At length we stood upon the precipice of the Ana
[68] Matangi, or "Cave of the winds." Through a cleft in the
rock a narrow path led to a ledge whence the adventurous
might climb to the cave's mouth; but the Government had
taken alarm at the fatal accidents that had occurred here,
and had made it a penal offence to make the attempt.
The cave's mouth is the top of a vast subterranean funnel
whose base is below the sea-level, so that when the tide is
rising the air within is compressed with immense force
and rushes out of the hole with a deep vibrating hum,
and at ebb-tide is sucked in with a whistling hiss audible
many yards away. Four times a-day, for a few minutes
when the tide is turning, this cave of the winds is at rest,
and at these moments it is safe to enter; but at half-tide
any one crossing the mouth is either blown off the ledge
or sucked in, unless he have a firm foothold and a clear
head.

This was not the only expedition in which Finau
shepherded me. Like every tourist who stopped at Vavau
before me, I paid a visit to the Hunga submarine cave
twice famed by Mariner and Byron. It lies some miles

THE CAVE OF BYRON'S "ISLAND." 179

to the seaward of Neiafu up the harbour, and when we reached it a heavy swell was rolling in towards the cliff. I was well prepared for the dive into the mouth by my experiences of the Yasawa-i-lau cave in Fiji, but my followers were obdurate, declaring that no one would attempt the Hunga in a westerly swell unless he was resolved on self-destruction. They cited the case of the captain of a ship of war, who was driven upwards by an incoming wave as he was in mid-passage, and who escaped indeed with life, but with his spine so lacerated by the sharp stalactites that he was permanently crippled. While we were still debating the question a smart sailing-boat bore down on us with a stout figure at the tiller, whom I recognised as Finau. He hailed us to say that he had come to pilot us to the other show-cave of the place, and (parenthetically, of course) to point out the boundaries of some land of which it was proposed illegally to deprive him. The cave just allowed our boats to run in with masts standing. Inside it heightened and broadened to a width of 60 or 70 feet. The limestone walls were disfigured with the names of Europeans and Tongans, and the dates of their offence; for, with the art of writing, has come the Cockney instinct to deface Nature with a record of existences to which she and all her creatures are supremely indifferent. 133

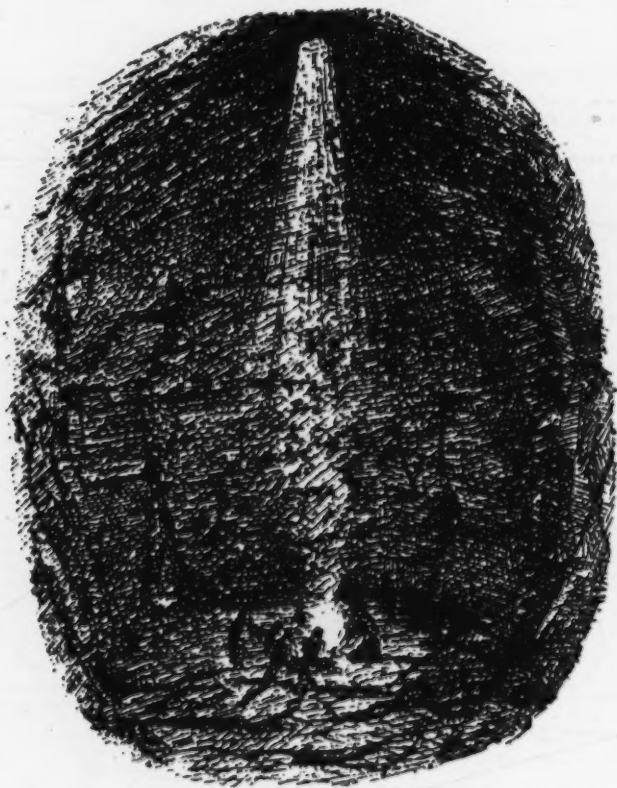
The stock entertainment of the place was a shaft of rock which, when struck with the handle of an oar, gave out a deep musical note. But Finau had something more serious in view than this puerile amusement. Leaving our boats, we clambered over the rocks through a dark passage and emerged into another cave, in size and shape [212]

14: Thomson G-3 (1886-1891) 1894
OU9 Tonga OU9

180

VAVAU.

- 133 like the interior of a large lime-kiln, even to the hole in the conical roof. Acting under Finan's orders, one of our men now swam back to the entrance of the cave, and a



"Sending up a thick column of smoke to the leafy chimney."

few minutes later a shout from the dome warned us to "stand from under." Through the chimney-hole invisible hands showered down great billets of firewood. Matches

RAIDING THE TREASURY.

181

were produced, and in a few moments a large fire was heating the stones in the middle of the cave's floor, and sending up a thick column of smoke to the leafy chimney in the roof. When the stones were red-hot and the oven was ready for its lining, the same invisible hand, in obedience to Finau's shout, poured through the hole a shower of green branches and banana-leaves, that fluttered down like the ruins of Klingsor's garden. The chickens and yams were soon baking in the steam of the leaves, buried under a foot of soil. Picnics such as this are to the idle young Tongan one of the highest forms of earthly happiness. [52] [517]

Fonua and addresses to the Civil servants had done something towards allaying suspicion and discontent in Vavau, in spite of the strenuous efforts of Mr Baker's son and the other Europeans to foster hostility to the Government. The result of the Governor's misconduct in accepting coin in payment of taxes had been to pour into the empty local treasury between £2000 and £3000 in silver. Seeing that the cow-faced sub-treasurer, in addition to his other delinquencies, reported that £6 had miraculously vanished from a saucer in which he guarded the public funds, though the fastenings of the treasury were intact, it was plainly time to remove the whole sum to a place where it could be employed in liquidating the debts of the country rather than those of the local officials. There was a strange display of emotion among the treasury clerks when I announced my intention. The Customs officer, an Englishman, enlightened me. The nobles of Vavau were Home Rulers to a man, at least in so far as their money was concerned. They held that every dollar- [51] [634]

⁶⁴⁶lands are not opened in bare legs save in the imagination
²⁹¹of Carlyle.

²⁹¹ For days past the stores on the beach have done a spirited trade in trousers, coats, and shoes—not the sort of shoes that may be bought by the dozen at any boot-maker's, but majestic fabrics of leather, built expressly for the opening of South Sea Parliaments, upon a special last 14 inches long by 8 or 9 broad. Such shoes as these cannot be lightly used. And so the spiritual guides of the people, when teaching that no self-respecting Tongan should attend church without black coat and trousers, admitted the religious principle that a man might work out his salvation in bare feet, and the shoes were relegated to the meetings of Parliament.

⁶⁴⁶ The scene outside is very picturesque. It is high tide, and the sea laps to the very edge of the short grass that
^[133]carpets the approach to the white Parliament House. The tall spars of the Cordelia tower above the spires of the miniature palace. The College students, dressed in white, are drawn up in two lines, so as to form a lane from the palace to the doors. The band and guard of honour look undeniably smart, both in their bearing and the polish of their accoutrements. It is a strange contrast with the same scene as it is described by Labillardière in 1791, exactly a century ago, when Mumui held his *faikava* on Sion Hill, now crowned with a church, but then with those twenty-four funny little huts into each of which a Cabinet Minister crawled to sleep off the effects of the Court bowl. Those were dark days before the *lotu* had illumined the minds of men, and most of the actors in to-day's scene, booted and be-trousered, full of the

175 ing-gear.] As they departed from us they set their course
177 towards the south-east, in the hopes of picking up some of the
others, who were good swimmers.

On the 10th the wind was S.S.-easterly, veering from S.E. to S. The course was W. and S.W.; and in the morning, after breakfast, we saw [on the horizon?] some very high and blue-looking land lying between S.E. and S., about eight miles from us. We sailed all day towards it with a light air, but were unable to get within reach, so stood off and on for the night; and towards evening we saw a sail a good way out off the land, and shortly after another one, which we took to be fishing craft, because they put to sea at night time and used torches.

133 On the 11th we arrived by mid-day at an island which was very high; and about two miles beyond it we saw another island, long and low. During the day we sailed over a bank with fourteen fathoms water on it, rocky bottom, lying about two miles off the land. As soon as we had passed over it we were unable again to get soundings. We anchored in twenty-five fathoms, sandy bottom, a long shot from the shore of the farther island.

[137] The island is a high mountain, shaped nearly like one of the Moluccas, and is covered with timber, mostly cocoa-nut palms, wherefore we called it Cocos Island.

The other island is much longer, but narrower, and lies east and west . . .

175 [Intercourse with the people followed readily, and great
177 numbers swarmed on board the ship. They traded freely, and sold 180 cocoa-nuts by evening, at the rate of 5 nuts for a few beads.]

[411] Canoes from the other island came off to the ship. The natives had hardwood staves in their hands like assegais. They boarded our shallop, and thought to have taken it from us; but our men being thereby constrained to defend themselves, let fly three muskets among them. At first they thought this was child's play; but the third shot struck one of them in the

175 to sling stones at us; but we shot at them with muskets and
177 three great pieces loaded with nails, whereat they leaped over-
622 board, not knowing whither to go. But we continued our course,
609 sailing W. and W. by S. This king must have assembled all
[142] his forces, for we were surrounded by quite 1000 people afloat,
of whom one we noticed was wholly white.

The first island—the high one—we called Cocos bergh, and to
the other, about a mile from it, we gave the name of Verraders
Eylandt, because the people from it sought to betray us.

[DISCOVERY OF NIUAFOOU.]

175 14th.—This morning we saw another island right ahead of us,
177 about seven miles distant, appearing as if round in form, and by
our reckoning about fifty miles from the islands we had left.
We named this one "Hope," and hurried towards it, in the
hope that we might find better facilities for watering there than
we had hitherto.

. . . The soundings were irregular, forty, twenty, thirty
fathoms, and no bottom. . . Twelve canoes came off: were
friendly. They gave us four flying-fish, and we gave them beads.
Sent the boat along shore for water: some jumped overboard
from canoes to capture the boat, which seeing, we fired six
musket-shots at them, and two were killed, one shot dead, while
the other sat in the canoe wiping the blood from his chest with
his hand. They could not understand the shooting, for they
saw no missile. The people on shore cried out *Bou! bou! bou!*
So did people in the canoes. Finding no anchorage, we got our
boat in and went on our course, in the hope of soon finding other
land, to the S.W.

133 The island was full of black cliffs, green on the top, and
137 black, and was full of cocos-trees and black earth. There
341 was a large village and several other houses on the sea-shore:
the land was undulating, but not very high. We called it
Good Hope, because we had had good hope of refreshing there.

CHAPTER XI

TONGA REVISITED

648 [133] OUR holidays were over ; our real work was now to begin. As we steamed past the islet of Atatá and opened the low, monotonous shores of Tongatabu, stretching crescent-wise as far as the eye could reach, I wondered how the impulsive, faction-riven little people would receive me. Ten years ago I had been escorted to the steamer by the Lords and Commons in procession, but I had then been a Tongan Minister of the Crown working my hardest to bolster the independence of my adopted country ; now I was an Englishman charged with a very different errand.

There is an apparent inconsistency about the two rôles that calls for explanation. Ten years bring many changes in the circumstances of little states. When I was last in Tonga, Hawaii was independent ; three great Powers were still wrangling over Samoa ; countless islands in the Pacific were yet unclaimed. All had fallen now,

AN ISLE OF UNREST

183

combined with that of Speaker of the Parliament.⁶⁴⁴
To assist in determining the boundaries of the coaling-station, he brought with him a body-servant and a young man armed with a theodolite, an instrument which proved of great value to us, though not in the way intended by its makers. By his charming manners and his hearty laugh he endeared himself to all on board, though he could not speak a word of any language but his own, and I was not always at hand to interpret. He lived nominally in the captain's cabin, but though he ate heartily and was quite at his ease, he showed the instinct of an old sailor in carrying up his blanket to the deck, where he was found in the morning asleep in a canvas chair.

Having a curiosity to visit Falcon Island, we¹³³ did not take the direct route to Vavau. Early in 1896 Falcon Reef, then a patch of coral awash at low water, suddenly broke into eruption and cast up an island of pumice stone more than 100 feet high. Mr. Shirley Baker, who watched the eruption from a schooner, described it to me as a terrific spectacle, as indeed it must have been, for the sea had access to the crater, and was flung aloft in explosions of steam. As soon as^[186] the mass was cool enough to stand upon, the

133 Tongan ensign was hoisted upon it, and the new
[189] island became a portion of King George's
dominions. It did not swell his revenues, for,
when I passed it four years later, it had shrunk
to less than half its original size, and every roller
that broke upon its shores brought down a land-
slip of pumice which covered the surface of the
sea for some distance. H.M.S. *Porpoise* had
examined it in 1899, and had reported it as a
reef barely awash, and her officers were anxious
to see whether there had been any change since
their last visit. We sighted it at three o'clock in
the afternoon. The sea was breaking heavily,
and as we drew near we were astonished to find
a black hump protruding nine feet above the
waves. It was impossible to make a closer
examination in the boats, but the navigating
lieutenant was satisfied that the restless island
was emerging again from the sea.

731 Early next morning we steamed into Neiafu
Harbour. Something unusual about the vegeta-
tion on the outer island had struck us as we came
in, but we were not prepared for the scene of
desolation that met us as we swung round Utulei
Point to the anchorage. The centre of a terrific
cyclone had struck the island on April 2nd, 1900,
just a week before our arrival. Scarce a house

731 their concrete church, still standing like an island
[314] among the general wreckage, as a proof of
Divine warranty, a little tempered perhaps by
reason of a gaping rent in the tower. The
people were living in the open air, crawling into
the cover of their ruined houses to shelter from
[152] the rain. Poor souls! they bore their misfortunes
[245] with a light heart, though the crop of orange
trees, from which they get their living, were
uprooted, and the cocoanuts would not recover
[245] for two years. Every boat in the island was
busy bringing food from the less stricken villages,
and the men were saving something from the
wreck by turning the fallen cocoanuts into copra.

648 Next day we set forth in the ship's boats to
survey the German coaling-station in the bight

[133] of the harbour. The shore is here a coral reef,
[134] upheaved about fifteen feet above the sea. The
[311] soil is shallow, but, like all limestone formations,
very productive, and covered with plantations

648 and coconut trees. On the further side was
504 the open sea, for this part of the harbour is

a mere breakwater, tapering away to a boat
passage in the bight of the harbour, where the
land is only two furlongs across. The Germans
had done themselves handsomely, and had
allowed no concern for the welfare of the

701 discipline, and preferred to capture entrenched
181 positions by direct assault.

000
● [133] The remainder of our visit was given to sight-seeing. I was anxious to revisit the Hunga cave, twice-famed by Mariner and Byron. In 1890 a westerly swell had prevented me from diving into it, but this time Finau had promised to provide guides from the best divers in the island, and to put no obstacles in my way if the weather made the adventure possible. But to my disappointment a westerly swell again set in, and the guides backed his declaration by refusing to risk their own skins. I had to admit to myself that it would have been a poor ending to my trip to be sent home in bandages, after defying the advice of the guides, especially as I had been warned by Mr. H. J. Marshall, R.N., who was a midshipman on H.M.S. *Calliope* when Captain Aylen explored the cave in 1852, that the feat was difficult even in calm weather. Captain Sir J. Everard Home being anxious to have the cave explored in order to test William Mariner's story, selected Mr. J. F. R. Aylen, then a Master's Assistant, now a Post-Captain retired, as being the best diver in the ship. He was taken to the indicated position of the cave's mouth in the

MARINER'S CAVE

191

galley, and furnished with a lead line and two natives as guides. There was no sea on, but the dive is a long one—one fathom down and five fathoms along the passage before it is possible to rise into the cave. Aylen was, I believe, the first white man to enter the cave since Mariner, and, being something of a draughtsman, he made a sketch of the interior, which was afterwards turned into a picture by an artist in Sydney. The return dive was not so successful. The great difficulty in diving out of these submarine caves is that, your face being downwards, you are deceived by the reflected light into coming up too soon. Captain Aylen scratched his back so severely with the stalactites that the wounds did not heal for two months.

With Finau for guide we rode out to see the famous fortress of Feletoa, at whose ramparts the most stirring of Mariner's adventures* were enacted. Those who have read this classic in the literature of travel will remember that when Toeumu revolted against her nephew, Finau Ulukalala, in 1810, the entire population of the island was entrenched at Feletoa in the largest and strongest fortress ever built in Tonga.

* *Mariner's Account of the Tonga Islands.* By JOHN MARTIN, M.D.

133
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15: Thomson G-3 (1886-1900) 1902
009 Tonga 009



From a photograph by

THE LAND-LOCKED HARBOUR OF VAVAU

J. Martin, Auckland

On the right is the flat-topped hill of Talau; in the distance Hunga Island and Mariner's Cave; the entrance stretches away beyond it

[Facing p. 192]

AN IMPREGNABLE FORTRESS 193

large cave full of water of unknown depth. It ³¹²
was this discovery that led to the choice of [712]
Feletoa as the site for the fortress that was to
contain the entire population of the island. We
explored the cave, and found that the water
was clear, but slightly brackish. Probably it
rises and falls with the tide, and the whole
island, like Niue, contains similar reservoirs of
fresh water beneath its crust. Mariner says that ⁷¹²
Finau had the ramparts levelled with the ground, [727]
but, to judge by the works still remaining, his
commands must have been but grudgingly
obeyed, for it would not take much to put the
place into a state of defence again.

Surveying the fort, even in its dismantled and
overgrown condition, we could well believe that
it had a most imposing appearance. The land- [33] e
locked inlet, with its vista of hazy islands to
seaward and its brilliant reflections, broken here
and there by light puffs of wind, must have been
a fit setting for the lofty triple rampart alive
with warriors in their war-harness. Of their [114]
Homeric deeds in the great siege you may read
in the pages of Dr. Martin, who, if he wrote
no epic, contrived at least to lose nothing of the
romance in William Mariner's story.

Sharks' teeth were a regular part of the furnishing of temples dedicated to shark deities. 227
776

Tobukulu and Nafanua, the twin sisters mentioned above, daughters of Toki-langa-fonua and Hina, and the mothers of Hemoana and Tafakula. They were turned into two rocks to which prayers were made for good seasons and big hauls of fish. 776
[823]
[782]

Hemoana, literally Sea-Wanderer, has already been noticed in the brief notes of the creation myth as one of the original gods. Another account regards him as the son of Tobukulu, born whilst his mother, with her twin sister, was swimming home to Eua after the incest with their father. Toki-langa-fonua had abandoned Eua in horror at the discovery of the close relationship that subsisted between himself and Hina, but the desire of the twins to see their father had added fresh blots to the family history. 773

Hemoana was abandoned in the sea by his mother as soon as he was born. He was wont to appear in the sea-snake (*tuku-hali*). [825]

Tafakula, literally Red-Edge, a female divinity, born soon after Hemoana as their mothers were swimming from Samoa to Eua. Tafakula's mother, Nafanua, refused to abandon her in the sea, although strongly urged by Tobukulu to do so, and took the child home with her to Eua. In process of time Hemoana came to Eua to visit his relatives there, and he and Tafakula added another to the family's record of unwitting incest, but the unholy succession was stopped by Tafakula's battering the fruit of this union to death with a stone. Offerings were brought to Tafakula, and intercession made to ensure fruitful seasons, and protection against hurricane and drought. [776]
[182]

The suggestion is made by an intelligent Tongan that the name may refer to the red horizon at dawn and sunset. She is the goddess of the light. The island of Eua is high and stands towards the sun-rising from Tongatabu. It would be the first to catch the ruddy glow of the sun as he rose, and would also reflect his last beams as he disappeared below the horizon. Red things are particularly associated with Tafakula, the red varieties of several objects being spoken of as hers. In Eua there is a mound about which are growing two sorts of coconuts, whose Tongan names mean the red nut and the white nut, which is still called the demesne of Tafakula. This mound is probably the site of a house sacred to her. 776
[821]
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[822]
[824]
[778]

Hina, a goddess widely known throughout Polynesia. Although the body of lore concerning her is not uniform there are numerous and close parallels between the accounts of the various Polynesian peoples. She occurs in several distinct connections in Tongan tradition, each of them presenting points of similarity with accounts from other parts of Polynesia. It will be well to summarise these. 776
771

There is a tradition that an early Tui Tofua was about to kill his son in a fit of jealous anger, but the youth obtained his father's permission to sail away with some of his people. When they got well out to sea he told the crew to jump one by one into the water. As each man leapt into the sea he became a shark, of the more harmless variety called *anga*. The young chief himself was last, and he was turned into one of the great man-eating sharks called *tenifa*. A Samoan on board, not relishing the metamorphosis, refused to participate, and returned and told the tale on shore. Since then the shark has been sacred (*tabu*) to the Tofua people, and must not be eaten by them, on account of the relationship subsisting between them. There is still extant a song referring to this exploit.

I have received a brief note regarding the gods of Nina Fo'ou, one of the most distant islands of the Tongan Group, lying midway between Vavau and Samoa. This is a hilly, volcanic island, with a lake in an old crater in the middle. It has been the scene of volcanic outbreak within very recent years.

The note states that the gods of Nina Fo'ou were three in number, namely Pig's Liver, the Octopus, and a large lump of Coral (*Bunga*). Neither the pig's liver nor the octopus could be eaten by their worshippers. Throughout Tonga the liver is a very special portion of the pig, and when on important occasions cooked food is presented to a chief the liver of a pig is taken and ceremoniously placed before him. *Bunga* (Coral) is the name of the chief of eastern Tongatabu from whom Motuku-vae-valu, the father of Muni, was hiding when his son discovered him. Bunga was overcome by that hero in a wrestling match. This Bunga was the possessor of two enormous *kara* plants, and of a white flying-fox from whose movements he read auguries.

When Nina Fo'ou became Christian the people threw their coral god into the lake.

There are several gods mentioned by Mariner of which I have not been able to get any independent account. Mariner was best acquainted with Vavau, whereas the foregoing notes deal mainly with Tongatabu. As a whole, however, the Tongan people fit into a framework which may be constructed in Tongatabu. The chieftainships of the two northern groups have well understood relations with Tongatabu, all deriving ultimately from the Tui Tonga. It is not clear what was the first home of the Polynesians in the group, or what they found on arrival. Tradition points to their having come from Samoa, a conclusion which is supported by the general evidence of geographical distribution, and to their first settlements having been in the southern part, though the farthest from Samoa, in Ena and Ata. It is not impossible, that these southern settlers may have been pre-Polynesian, and that the acclimatisation of Polynesian myths amongst them was

MODERN TONGA

101

without spelling, probably owing to deficiencies of potash. There are no minerals in Tonga, and no forest resources of value.

The islands in the volcanic chain are of little account. Only Niua Fo'ou, Niuatobutabu, and Tafahi are large or safe enough to be peopled, and they contain less than a tenth of the population. Two of them, however, have attracted some fame, Niua Fo'ou because of its Tin-Can Mail, and Falcon Island because of its periodic disappearances. This jack-in-a-box island is associated with an active volcano, whose eruptions occasionally leave a raised surface of ash and scoria which sea and rain later wash away.

The eastern chain is divided into three groups, Tonga Tapu in the south, Ha'apai in the centre, and Vavau in the north. Tonga Tapu contains about half the Kingdom's habitable area, and half its people (16,234). Ha'apai has nearly the same population as Vavau, but less than half its habitable area.² Each group has a serviceable port, Nukua-fofa in Tonga Tapu being the most important and also the capital.

Climatically³ the Kingdom is well favoured, since it lies in the zone of the southeast trades, and has no orographical obstructions to cause rain and high humidities. The tropical Niuas have much the same rainfall and temperature as Apia and Suva, but the other groups have

² The following statistics illustrate the size, distribution, and density of the population (1939 Census)

Group	Population	Tongans	Habitable Area	Persons per sq. mile	Percentage of Tongans
			sq. miles		
Tonga Tapu	16,234	15,324	134.8	120	47
Ha'apai	7,483	7,383	24.3	308	22
Vavau	8,199	7,957	36.1	143	24
Niuas	2,214	2,198	20.6	108	7
TOTAL	34,130	32,862	235.8	145	100

³ The following climatological statistics (supplied by the Director of Meteorological Services, Air Department, New Zealand) illustrate in outline Tonga's principal climatic characteristics:

	Nukualofa	Vavau
Annual mean sea-level pressure (mbs)	1014	1013
Annual mean air temperature (°F)	74	78
Annual mean daily maximum temperature (°F)	80	82
Annual mean daily minimum temperature (°F)	68	72
Average annual rainfall (ins.)	63.45	77.57
Percentage of winds between south and east	72	68
Average wind force in morning (m.p.h.)	8	6
Average wind force in afternoon (m.p.h.)	10	7
Annual average relative humidity (a.m.)	79%	77%
Annual average relative humidity (p.m.)	73%	—
Annual mean of sea temperature (°F)	77	79

22: West

OU9 Tonga OU9

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A	B	C
D	E	F

Chart of position of map following p. xv. [facing map]

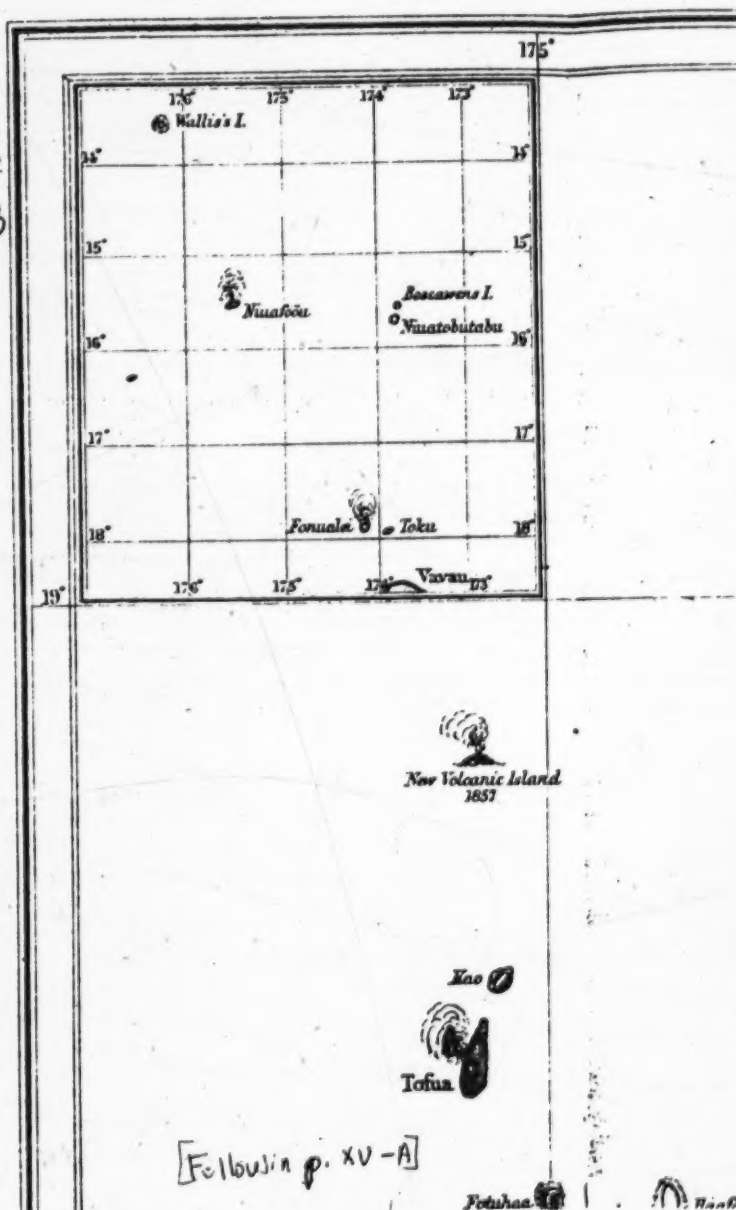
22: West

M-3

(1846-1855) 1865

OU9 Tonga OU9

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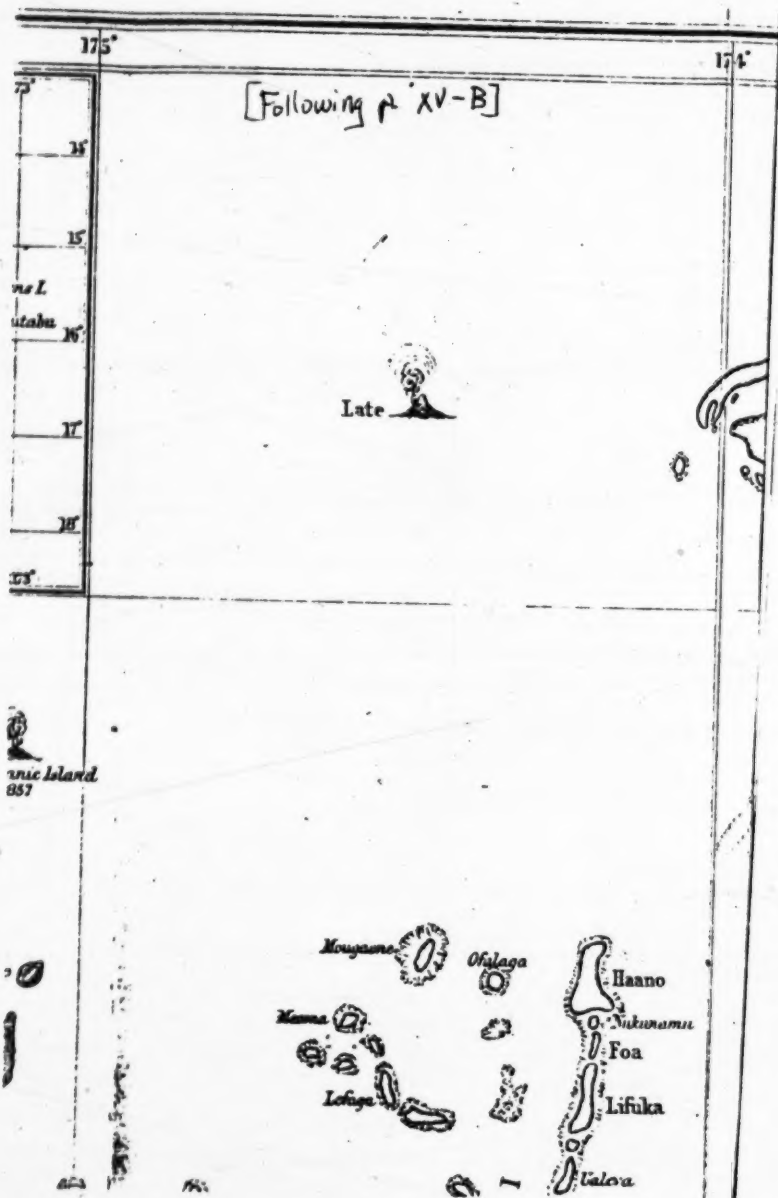


22: West

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(1846-1855) 1865

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22: West M-3 (1846-1855) 1865

OU9 Tonga OU9



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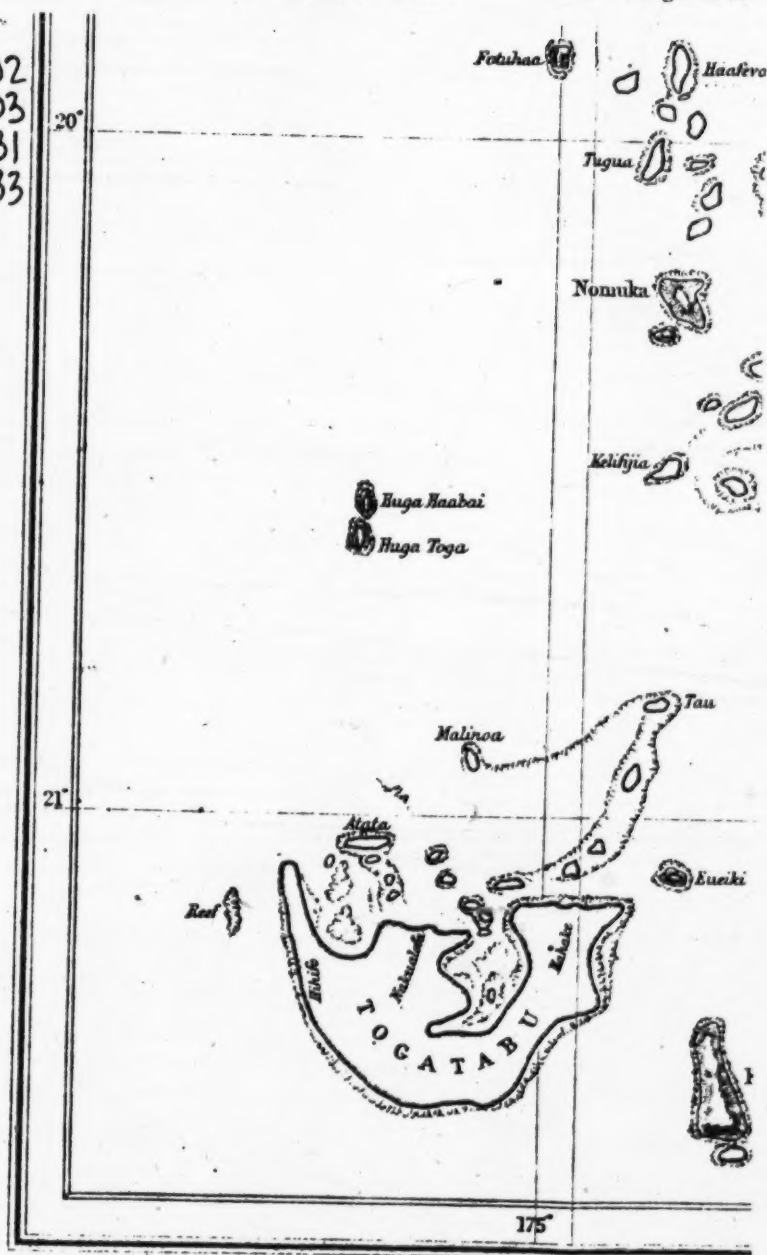
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(1846-1855) 1865

OU9 Tonga OU9

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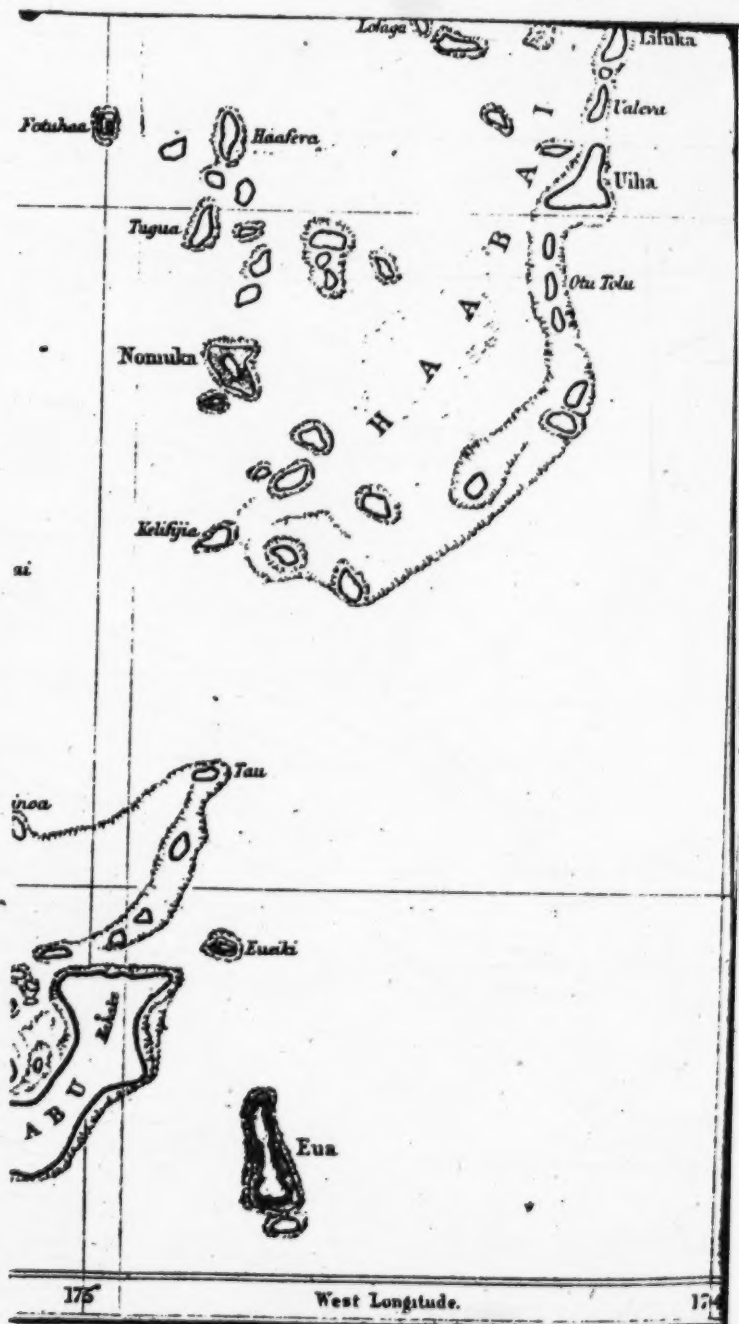
[Following p. XV-D]

22: West

M-3

(1846-1855) 1865

OU9 Tonga OU9



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[Following p. XV-E]

22: West

M-3

(1846-1855) 1865

OU9 Tonga OU9

Lifuka

Maloua

Uliha

Idu

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CHART OF TONGA
OR THE
FRIENDLY ISLANDS.

174

[Following p. XV-F]

● 133

[137]

To the right lay Eua, an island of surpassing beauty, which we shall have reason to describe more particularly in a subsequent place. Its shores seemed very precipitous and indented by deep ravines. The whole island was belted round by a girdle of silvery foam, and ever and anon, although at a distance of several miles, we could mark the glistening spray flying up on the dark background of perpendicular rocks. There were no signs of human habitations, excepting where the blue smoke curled up from among the dense groves of trees, which were intersected here and there by undulating tracks of verdant sward. We looked in vain for any of the usual marks of the civilisation we had now left far away. No white lighthouses stood upon the headlands, no snug farmsteads on the hill sides, and no gay villas in the coves or bays of the coast. Nor were there any fishing towns or watering places to indicate a teeming population. Nature appeared in her own primitive and gorgeous costume.

To the left of our course the horizon was bounded by a low range of land forming the southern coast of the island of Tongatabu; but we were at too great a distance to distinguish any of its peculiarities.

It was almost in vain that our phlegmatic steward announced the ordinary routine of breakfast; but hastily despatching it, the bell was tolled for morning prayers, and during that service we had the first intimation of the many dangers of Polynesian navigation. A cry came from the look-out stationed on the fore-top-sail yard, "Keep her away—quick—a rock close ahead." Providentially the rock was cleared; but the vessel was within only a few

REEF NAVIGATION.

41

yards of its edge. When we again went on deck, the whole scene was changed as if by some mighty enchantment.

The sea was now smooth. The ship's course lay through deep channels formed by numerous ledges of coral reef, over which breakers dashed with the noise of thunder. In these narrow channels the brig had to be tacked several times. The operation was by no means unaccompanied with danger. A slight error in the steerage, a lull of the breeze, or missing stays, as was not improbable with such a dull craft under hand, and we should instantly have been swept upon the edge of the perpendicular reefs, between which the tidal current rolled along at the rate of four miles an hour, and in some places with even greater rapidity. All, however, went well, and just before reaching the most intricate part of the passage a canoe was seen coming from the shore. It lay so low upon the water as to be scarcely discernible. Conscious of this fact, the sole occupant of the tiny vehicle occasionally flourished his paddle in the air to attract attention. Believing him to be a native pilot, a short tack was made to give him time to overtake us; and a few minutes sufficed to bring the canoe alongside. We looked for the first time upon a Friendly Islander, and assuredly the impressions we received were by no means favourable. The man was almost naked. The only article of attire he wore was a thick covering of plaited leaves thrown round his loins; and dripping as he was with water, he really looked as if he had just been floated up from some ocean cavern. Although an old man, he was remarkably nimble in all his movements. A narrow band of native cloth was bound

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502

NUKUALOFA.

43

gorgeous foliage skirting the shore, sent out some of their swarthy inhabitants to wonder and shout at the approach of the *taka babalagi*, or "ship of the sky," as all foreign ships are called by the Tonguese. The wild enthusiasm of the simple-minded Polynesians at the approach of a foreign ship may well be excused, when we remember that such visits are the only links of connexion between those isolated and remote regions and the great continents of our babbling world. 177

In due time we anchored safely within a short distance of the shore, and exactly in front of Nukualofa, the principal town of the island. There is no harbour, but the anchorage in the roadstead is considered exceedingly safe. The Mission brig "John Wesley" has, on two occasions, safely ridden out heavy gales amounting almost to a hurricane. In addition to the good "holding ground," the roadstead is well protected from the heavy roll of the sea by numerous reefs, extending in large and small patches, for many miles from the shore. Beyond these again there exists a great barrier reef enclosing the main portion of the group, but through which there are several wide and navigable openings to the ocean beyond. 133 504

An interesting panoramic view of nearly the entire length of Tongatabu is obtained from the deck of a vessel anchored off Nukualofa. No high hills or mountain ranges break the even line of sight. Indeed, the highest land visible is a small natural mound immediately in a line with the usual anchorage. Upon this mound there once stood a strongly fortified native kolo, or town, against which cannon were employed, for the first time, in one of the native wars, as detailed by Mr. Mari- 133 (712)

ner in his book on the Tonga Islands. The summit of this mound is now crowned by a good chapel of native construction, which affords an excellent land-mark to navigators making for the anchorage; and it also stands as a very prominent emblem of the Gospel triumphs that have been achieved over the former habits of the people.

Looking eastward, Bagaimotu and a cluster of other islands, stretching away to the north-east, shut out the "*Hahake*," or eastern end of Tonga, from sight, whilst *Hihifo* and the island of Atata bound the prospect on the extreme west.

632 The town of Nukualofa may be regarded not only as the capital of Tongatabu, but as the metropolis of the little ocean empire of King George Tubou. It has risen from the obscurity of a small village, and has become the centre of religious influence and the chief seat of political authority, while several of the ancient royal residences have been almost entirely deserted. It is partly indebted for

[361] its importance to its admirable situation on the sea-board, but most of all to the fact, that Christian converts from various heathen towns were drawn thither, during successive years, that they might reap the full benefit of Missionary instruction, and be freed also from the persecutions to which they were subjected by their heathen friends. A short description of this town will serve to indicate the general appearance and arrangements of all others.

361 Nukualofa is intersected by tolerably wide paths, [363] kept scrupulously free from all rank vegetation and dirt. These paths are bounded by the neat reed [351] fences which enclose the *abis* or residential sections [245] of the various chiefs and their retainers. These

TUGUA.

63

two hundred miles distant, and the ship's course would lie through clusters of islands, the sight of which would be an ever-changing source of pleasure. 797

We touched at two places only on the way, and we shall therefore reserve for future pages any detailed description of the numerous islands we passed. 797
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Haabai is the general name given to the first extensive range to the N.N.E. of Tonga; and at one of the group, called Haafeva, we anchored before the sun had set on the day we left Nukualofa. Our object in doing so was to land the usual annual supply of stores for the Rev. William Webb, the resident Missionary at Tugua, another island distant eight miles from Haafeva. There being no anchorage whatever at Tugua, all stores, &c., could only be obtained by way of Haafeva, after being transhipped to native canoes.

Mr. Webb's sphere of labour was a very solitary one. 797
Remote from the track of all foreign vessels, and separated by a rough and dangerous part of the ocean from all his Missionary colleagues and their families, Mr. Webb, continued his faithful and blessed toil upon Tugua and its adjacent islands, for seven long years. A noble example his of self-sacrifice and of sacred devotion to his great Master's service. Truly, bright will his crown be when decked with the memorial of the scores and hundreds of converts around his lonely habitation who were the fruit of his untiring ministry.

With none of the Missionaries was our own lot so remarkably interwoven in after years as with that of this excellent man. Together we looked death in the face, and were almost miraculously saved from drowning; and at a still darker and

EXTENT OF POLYNESIA PROPER.

73

miles, and the population at not less than thirty millions. These figures, however, must be taken under considerable reserve, seeing that no portion of the globe has been so neglected as this, in regard to those surveys and scientific explorations, upon which alone such computations can be founded with safety. This vast region has been, in recent years, distributed into five portions, called respectively, Malaysia, Micronesia, Melanania, Australasia, and Polynesia. In some respects these divisions are well-defined and convenient, but, in the present work, we shall not strictly follow them. 121

By Polynesia Proper, we understand the numerous groups which lie within fifty degrees, on either side, of the prime meridian; and between the fiftieth parallel of south, and the thirtieth of north, latitude. We thus *exclude* the continent of Australia, and the whole of the large and numerous islands of the Indian Seas, and we *include* the islands of Micronesia, and Melanania. This portion, then, of the insular system of the Pacific Ocean, will be found to extend over 7,000 miles in the one direction, and nearly 5,600 miles in the other. We call the Friendly Islands "South-central Polynesia," because, by drawing a semi-circular line through the southern portion of the region indicated, starting from the Ladrone Islands in the west, to the extremity of the Paumotu group in the east, the Friendly Islands will be found lying, about midway on the line, between 15° and 23° south latitude, and 173° and 176° west longitude. 101 131

Like most of the smaller archipelagoes of Polynesia, the Tonga Islands trend in a direction from north to south, indicating, beyond doubt, a striking polarity in their structure, although this is still 133

- 133 more marked in some other groups, such as New Caledonia, and the New Hebrides.

174
[131] It will also be observed, that the Tonga Islands are the nearest of any to those of New Zealand, from which they are distant about one thousand miles. Hence, it has generally been concluded, that the islands of New Zealand were peopled from thence : a supposition that is strongly borne out, by the close affinity existing between the physical character and habits of the inhabitants, and by the correspondence of their language. Native tradition in New Zealand, indeed, declares, that the first inhabitants arrived from the northward, in two separate canoes, and at a considerable interval of time. The later voyagers are said to have become assured of the presence of their friends in the island, by discovering, on the shore, the beautiful red feathers of the taviki, a bird whose tail feathers are much esteemed by the Tonguese, and others of the South Sea Islanders, in making head-dresses, and in the decoration of mats.

- 131 The Fiji Islands lie to the westward, and W.N.W. of the Tongan. A distance of about two hundred miles of clear sea separates their nearest points of approximation. The Navigator, or Samoan Islands, lie to the north and by east, at a distance of about four hundred miles. There are, however, a few isolated islands, tributary to Tonga, lying midway on the direct track of navigation. In an easterly direction, the nearest island, to the Tongan group, is that of Niue, or Savage Island, distant about one hundred and sixty miles.

- 101 It will be seen, by a reference to the chart, that the Tonga Islands comprehend three principal and
[133] well-defined groups. Fifteen of the islands rise to

HAABAI, OR THE CENTRAL ISLANDS. 75

a considerable height; thirty-five are moderately elevated; and the rest are low. The three divisions have generally been known as the Tonga, Haabai, and Vavau Islands. The latter group, however, is frequently called by the natives Haafuluhao. 101
[133]

The Tongan group contains Tonga, the chief island, from which the group is named, and which, by way of distinction and eminence, is most generally called Tongatabu,—Tonga the Sacred. Next in importance are the islands of Eua, Eueiki, Bagaimotu, Atata, Fafa, and a goodly sprinkling of smaller and uninhabited islets. With the single exception of Eua, none of the Tongan group reach any considerable elevation. 101
[133]

The Haabai Islands are separated from the Tongan, by about thirty miles of clear sea at their nearest points, from whence they extend northward over a distance of seventy miles. The whole group is intersected by alternate reefs and deep sea channels, which make the navigation both intricate and dangerous to strangers. They are all of low elevation, with the exception of the volcanic islands of Tofua and Kao. Lifuka, Haano, Foa, Lofaga, Mougaone, Uiha, Fonualoa, Uoleva, The Otu-Tolu, Nomuka, Haafeva, Tugua, Fotuhaa, and the two islands already named, are the principal included in this group. 131
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[103]

Between Tonga and Haabai there are also two high islands, called Huga Tonga and Huga Haabai. They lie about twenty miles to the westward of the usual course from the one group to the other: and they are separated from each other by a deep sea channel of about one mile and a half wide. They give clear evidences of volcanic origin, and are haunted by innumerable flocks of sea-birds. Access [103]
[136]

131 to these islands being extremely difficult, owing to
 133 the precipitous nature of the coast, and lying also,
 as they do, very much to leeward, they are uninhabited, and are but seldom visited by the people.

502 In 1851 the following incident occurred in
 731 connexion with this locality. Vakajuiola, a brother of the late King Josiah, of Tonga, with a number of his people, was on a voyage from Haabai to the former island, when a severe storm overtook them. It was late in the day, when they bore away before the gale, expecting, if the wind continued, and the canoe held together, to be driven to the Fijis. The storm, however, rapidly increased. The large sail was torn into shreds; and, owing to the heavy sea, it was momentarily expected that the *kalia* would part in sunder, and consign the sixty persons on board to a watery grave. Providentially, the vessel was driven straight between the two Hugas, and there it did indeed part in sunder, and become a total wreck. Not a single life, however, was lost. Some gained the shore of the one island, and some that of the other; but all, with great difficulty, effected a landing, and scrambled somehow to the summit of the cliffs. Here they remained for several weeks, subsisting upon cocoa-nuts, birds' eggs, and any edible roots they could find. Starvation at length stared them in the face. Meanwhile it was resolved, by some means or other, to construct a small canoe, or *bobao*, in which one of the party should attempt to paddle his way to Tongatabu, a distance of about forty miles, for assistance. By the aid of one plane-iron, mounted as an adze, a small *bobao* was made, in which a native Teacher embarked on his perilous undertaking. He reached our Mission

HAAFULUHAO, OR THE VAVAU ISLANDS. 77

station at Hihifo, in Tongatabu, in safety, but greatly exhausted; and from thence canoes were immediately dispatched for the rescue of the sufferers, all of whom were safely brought away. The first escape, and subsequent endurance of suffering, on the part of the castaways, was all the more remarkable, because a goodly number of them were women. But it may be here remarked, in passing, that Tonguese women are quite as clever and expert in swimming as are the men; although, of course, their physical powers would not enable them to hold out so long as those of the sterner sex. 502
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Leaving the Haabai group, and proceeding still to the northward, another volcanic island is met with, called Late. This island lies in the same parallel of distance as the two Hugas, from the main chain of islands, and is therefore considerably to the westward. It occupies a position about midway between Haabai and the Haafuluhao, or Vavau group. It also is uninhabited, but it is an island of considerable resources, and it is frequently visited by voyagers proceeding between Tonga and Fiji. In making a final start for the latter islands, Late affords a good point of departure for the native navigators from Vavau. The nearest of the Fijis lie almost due west from thence, and Late, being a lofty conical island, is visible from a great distance. 481
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[103]

The Haafuluhao group is the most variegated and beautiful of the Friendly archipelago. Of the islands which compose it, Vavau is the largest and most important. Then come Bagaimotu, Falevai, Niuababu, Huga, Oloua, Koulo, Ofu, Ovaka, and a number of islets, chiefly lying to the eastward, in close proximity to each other. [103]

VARIED DEVELOPMENTS OF STRUCTURE. 79

Plutonic formations looming grandly and loftily 133 ●
over a wide sweep of waters.

We have no hesitation in averring, with reference to the geological formation of the islands, that many of them must belong to very modern times, and that they have been indebted for their existence far more to volcanic causes than to the labours of the coral polypes. Speculators, having scanty data for their theories, have asserted that all have been built up from the ocean bed by the labours of these marine masons. But this idea must be abandoned in the presence of such facts as those we shall shortly adduce. Some of the islands are almost level with the sea, while others are hundreds, and even thousands, of feet high; though, on the summit of the latter class, masses of coral are said to have been found similar to those at the water's edge. It has, therefore, been well observed, that "as the animalcules which raise these submarine habitations cannot live above high water mark, it is manifest, either that the Pacific has sunk to a lower level, or that the several islands have been raised by an expansive force acting from beneath. There can be no doubt that the latter agent ought to be assigned as the true cause of the phenomenon." That it is so, we now proceed to prove, both with regard to the high islands, and in the case of those also that are usually classified as corallines. During a space of only fourteen years, dating from the year 1845, there have been, in the Friendly Islands, vast and active developments of volcanic agency, most of which we have ourselves witnessed.

Early in 1846, the island of Fonua Lei, (Ivory-land,) was laid in total ruins as the result of a terrific eruption. The signs of its coming were

133 long continued and unmistakeable. The scanty
 133 population, living on the adjacent island of Toku,
 166 were able, therefore, to make their escape from the
 vicinity of the awful conflagration. Their principal
 gardening grounds lay upon Fonua Lei, and these
 were first of all deserted. But finding too scanty a
 subsistence upon Toku itself, and dreading, from
 the frequency and force of the earthquakes occur-
 ring, some sudden outbreak, the people removed,
 in the course of the year 1845, to a portion of land
 assigned them by King George in the island of
 Vavau. The departure did not take place too soon,
 for the eruption broke out in the beginning of the
 133 following year. Upon our arrival in Vavau in the
 month of July, and for many months afterwards,
 we could look out from our windows, night after
 night, upon the glare of the tremendous fires,
 although at a distance from us of forty miles.

For several weeks prior to the eruption, earth-
 quakes were unusually severe and frequent in the
 Vavau group; while very strange and terrific
 sounds were heard both before and after it took
 place. The inhabitants were thrown into a state
 of great alarm, for it appeared as if their own land
 would be involved in ruin. At the time of the
 catastrophe, an American whaling ship, commanded
 by Captain Samson, while on the way to Vavau, fell
 in with and passed through a thick and heavy
 shower of ashes and pumice-stone. He gave the
 Missionaries the following statement, and placed in
 our hands a bottle containing some of the dust and
 ashes that had fallen upon the deck of his vessel.

"At the time we saw the cloud it was a double-
 reefed topsail breeze from the north-east; but it was
 a beautiful, clear, starlight night. As we ap-

PERSONAL VISIT TO FONUA LEI IN 1848. 81

proached, it appeared like a squall; and as soon as we entered, the eyes of the men on watch were blinded with fine dust. Captain Samson put the ship about; but being convinced that there was no land near, he again kept on his course. When the sun arose, the dust appeared of a dark red colour, rolling over like great volumes of smoke, and presented an appalling appearance. At eight A.M. it became so dark that candles had to be lighted in the cabin. At eleven A.M. the atmosphere began to clear a little, and the sun was occasionally seen. By noon we were clear of the cloud, being then in 170° 45' West longitude, and 21° 2' South latitude, having sailed through the shower of ashes at least forty miles." Captain Cash, of the ship "Massachusetts," got into the shower about the same time, though his course lay in the vicinity of Savage Island, probably sixty miles to the eastward of Captain Samson's position. This shower of dust also fell, in immense quantities, over the whole of the Vavau Islands, producing great damage to the vegetation and crops of the country.

We had no opportunity of visiting Fonua Lei, and Toku, until the beginning of 1848. Our intention then was to land and make a few personal explorations. Such, however, was the violence of the surf, breaking upon the blackened shores, that it would have been madness to make the attempt. We therefore sailed along the coast, as near as a due regard for the safety of the Mission ship would permit, while soundings were taken, and we narrowly examined the various points of interest with the aid of telescopes. The scene was truly one of gloomy and terrible desolation. While the day was beautifully clear and bright, the entire island lay before us like

● 133 a huge black charnel-house. Not a blade of grass, or the least semblance of either animal or vegetable life, could be discovered. The hills were riven into fantastic shapes, and their sides furrowed by black lava-streams. The level grounds appeared covered by an unbroken mass of hardened scoria. From numerous cracks, and miniature craters, volumes of smoke were still issuing; and the recurrence of sudden and lofty spirts, of what appeared to be steam vapour, suggested the progress of a subterranean conflict between the elements of fire and water. On the side of one of the rent hills we saw an extensive deposit of sulphur, the smell of which had reached us while yet at a considerable distance from the land. It was also evident that for several miles, immediately around the island, great changes had taken place in the sea-bottom. The water had shoaled up, in many places, where no soundings had formerly been found; and patches of sandy beach now appeared where none had previously existed. In short, the whole island was turned inside out, and had been so shattered as to have lost, in great measure, its original outlines. Everything had yielded to the irresistible rush of the volcanic elements, and the tide of fire had wrapped all living things in death or direst ruin. There were also clear evidences that the base of the island had been greatly extended, both by the overflowing of the lava-streams, and also by the sudden upheaving of the ocean's bed.

On the 24th of June, 1853, another dreadful eruption took place in Niua Foöu, latitude 15° 32' South, and 175° 30' West longitude. This island lies at a distance of about two hundred miles N.N.W. from Fonua Lei. It is in all respects of very peculiar conformation. Its aspect viewed from

ERUPTION IN NIUA FOOU IN 1853. 83

the sea is sepulchral and forbidding. Nothing is presented to the eye but huge piles of funereal rocks, belted round at their base by the white foam of the breakers. On landing, the paths are found to be black, the stones are black, and even the shrubs and trees, in the lower parts of the ravines and valleys, look black and dismal. In the higher portions of the island, however, the vegetation is rich and beautiful. A lake of pellucid and almost unruffled water occupies the centre of the island. This lake has never been fathomed, although the people have often made the attempt. The surface shines like a vast mirror; and its calm repose contrasts most strikingly with the turmoil of the outer ocean in the distance. The entire island, in fact, seems to be the circular ridge of an ancient and vast volcano. From its summit the observer looks down, on the one side, over stupendous cliffs, upon the lake, and over the swelling and restless sea on the other. The lake is about three miles in diameter, and there is no visible connexion between it and the sea. The water is excessively brackish, and no fish of any kind is found. The surface of the lake seems to be on the sea level, but the necessary observations to determine the point have never been made.

The scene of the destructive volcanic eruption referred to, lay over the finest gardening land in the island, through the whole of which the writer walked, during a Missionary tour, in 1848. It was highly fertile, and well cultivated. Eruptions, on a small scale, had already occurred on different parts of the island, even within the memory of some of the oldest inhabitants, but never in the district now doomed to total destruction.

Earthquakes, being common, did not generally [731]

● 133 731 create much alarm among the natives; but, on the night of June 24th, 1853, one of long continuance, and dreadful severity, startled the people. It, however, passed away, and was succeeded by a low muttering sound as of distant thunder. About midnight another convulsive throe shook the entire island with greater force than before. That also passed away without any visible evil consequences. At two o'clock A.M. a third fearful convulsion of nature ensued, with most appalling and fatal results. The earth was rent open in the very centre of a native village. A small chapel was swallowed up, and the flames of a new volcano shot up high in the air, as red as blood; while the molten sea of lava, belching from the fiery gorge, so suddenly opened, swept houses, trees, and all living things, into one burning sepulchre. Before daylight an extensive tract of country was completely buried beneath a mass of liquid fire. The quantity of lava disgorged, in this eruption, must have been enormous. Ten miles of country, once covered with richest verdure, having been encased in solid rock, averaging from eight to fifteen feet in thickness.

The descriptions of this sad calamity, given to us both by Europeans and natives, only a few months after it took place, were such as might well justify the supposition they entertained on that dreadful night, that the last knell of time had been rung, and that the judgment of the great day was at hand.

133 One year after the eruption, the spot was visited by a brother Missionary, whose account we here transcribe:—"After breakfasting on a baked pig, prepared by the chief of the village that was engulfed, and who lost his whole family, we set off to

REMARKABLE INCIDENTS.

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visit the craters. There is no crater where the village was swallowed up, but there is one a short distance from it. There are upwards of thirty craters. I scrambled up the principal one; but the cinders, of which the cone is formed, were so hot, that I could not stay up a moment; nor could I bear the cinders in my hand for any length of time. The cinders are of the nature of coke and of burnt clay, and the lava is more like bitumen than scoria. I saw no metallic substance whatever on the craters or streams of lava. From the principal crater to the outermost one is a distance of six miles, with craters at certain intervals. The tide of fire flowed on to the sea; and the main stream is three miles wide from the lake to the ocean. The lake boiled like a cauldron; and when the principal crater was burning fiercely, all the others were so also; and when its fire slackened, the others did so simultaneously: an evident proof that the whole island is one vast fire, with a thin crust of earth upon its top." 133

Long after the more powerful action of the volcano had ceased, the waters of the lake were frequently disturbed by tongues of fiery flame shooting up through them, as well as from clefts that opened in the surrounding precipices. These phenomena were not infrequent, and they created great consternation in the native mind.

Marvellous was the escape of those who survived the terrors and dreadful catastrophe of that fearful night. Some were terribly scorched by the hot cinders that poured upon them as they ran. One man, while running, stumbled into a fissure of the ground, which suddenly opened at his feet; but recovering his footing, with great presence of mind, and a mighty spring, he flew off again, just in time 133 731

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731 to escape from a jet of fire which shot up from the very spot where he had fallen. Another, snatching up two of his children, and shouting to his wife to follow, made for an adjacent rising ground, where they found some shelter. His poor wife, however, perished. For a few moments she rushed after her husband, but evidently recollecting that there was still one of their children left in the house, she was seen to rush back again for its rescue. Alas! no sooner had she entered, than the flood of boiling lava rolled round the house, and it became their winding-sheet. Another, a little child, rushing headlong in terror to the hill, where a few of the people were elevated above the stream of death, stumbled over one of the steep cliffs overhanging the lake, and was supposed to have perished. A gracious Providence, however, had watched over the helpless little one. It was found two days afterwards, greatly exhausted, but still alive, suspended in the branches of a tree which grew out of the cliff side. Thus had it been saved not only from the fire, but also from being dashed in pieces, as it would have been, had it fallen to the bottom of the rugged cliff.

Elisha Tubou, the native manager of day-schools on the island, in a letter to the Rev. Richard Amos, referred in the following terms to the calamitous visitation: "I now make known what has happened to this land. On the 24th of June last, three dreadful earthquakes shook the island in the night. The earth then opened, and swallowed up a village. Twenty-five persons were consumed in the burning gulf, together with their dwelling-houses and chapel. Eighteen escaped to the mountains. A great part of the land is destroyed.

SERMON ON SITE OF THE DESTROYED VILLAGE. 87

We all expected death, and prayed for the coming of the 'John Wesley.' O, why did she not come? All the people here are afraid of the wrath of God. Sinners have confessed and forsaken their sins. God has shown mercy as well as wrath; and nearly all the people meet in class."

It is not to be wondered at that a deep, and wide-spread, religious awakening should have followed the solemn scenes attendant upon the eruption; and the first desire of the survivors of the destroyed village, and, indeed, of all the inhabitants, seemed to be to escape from the presence of a power so mighty and destructive. Hence it was but natural that they should long for the appearance of the Mission ship, which was expected about that time on her usual annual visit. That vessel was almost the only link of connexion they had with adjacent islands; and, had it arrived at the time, it would have afforded them the most likely mode of transference to another country.

As soon as the cooling of the surface permitted any exploration of the scene of the calamity, it was determined, by the chiefs of the island, to hold a religious service, as near as possible to the supposed site of the overthrown village. Accordingly a large assemblage of people met, courageously yet solemnly, under the shadow of the largest volcano, then still in action. John Latu, the then resident Assistant Missionary, delivered on the occasion a most touching and impressive discourse from these words: "For we know that if our earthly house of this tabernacle were dissolved, we have a building of God, an house not made with hands, eternal in the heavens."

After a considerable time had elapsed, the peo-

731 ple became more calm, and all idea of leaving their
 794 home was abandoned. The state of the island
 797 shows, however, that, at any moment, they may
 be exposed to the recurrence of similar, and per-
 haps even more fatal, visitations. Under these
 circumstances, it is satisfactory to know that a
 large proportion of the people are genuine Chris-
 tian believers, and that even the unconverted
 among the community have the fear of God before
 their eyes, and are under daily religious instruction
 and influence of one kind or another.

133 In the beginning of the year 1854, while the
 writer was residing at Lifuka, in Haabai, another
 new volcano broke out, with great violence, on the
 Island of Late, which lies in latitude 18° 35' S.,
 and longitude 175° 16' W. Although several weeks
 elapsed before correct information reached us of
 what had happened, yet, on the night of the erup-
 tion, the loud roaring of the volcano was heard by
 us at Lifuka, distant from Late about fifty miles.
 From the shore of our island, an immense pillar of
 smoke was seen during the day; and at night,
 the fire of the volcano was distinctly visible from
 several of the islands that had the advantage
 of a higher elevation than Lifuka. The position
 (797) of the island, and the direction of the prevailing
 wind, carried the effects of the eruption more
 towards Vavau than Haabai; and these were thus
 briefly described by the resident Missionary, the
 Rev. George Daniel.

"We have lately had an eruption at Late. I do
 not know whether you in Haabai would see any-
 thing of it; but here we have had a most fearful
 smothering. The people say that the fall of dust
 when Fonua Lei broke out, was nothing when com-

NEW VOLCANO IN LATE.

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pared to this. The light of the sun was thoroughly obscured for many hours by the thick clouds of dust and ashes. The whole face of the country is blighted; and I am afraid that the crops will be greatly injured, if indeed they be not totally destroyed. The fine dust penetrated even into our closed houses to such an extent as to spoil our very meals."

Although frequented by the natives, Late had no resident inhabitants, so that in this case no lives were lost. As soon as it was safe to do so, the island was visited and explored. No streams, or reservoirs of water, were known to exist on the island, before this eruption; but the natives reported, on their return to Vavau, the formation of a beautiful fresh-water lake, at a considerable elevation on the mountain side. The central portion of one side of the mountain, (which reaches an elevation of two thousand five hundred feet,) was found to have been completely blown out, a fact which we ourselves subsequently verified; while many other changes of a minor kind had followed the outbreak.

The volcanic island of Tofua, in the Haabai group, is somewhat smaller in extent than that of Niua Foou, but otherwise it has many features in common with it in appearance and character. It is in constant action, with more or less of periodical violence. A personal visitation of this island in 1853, when on Missionary duty, and while delayed for several days by stormy weather, afforded us ample time to explore it thoroughly.

Ascending, by a steep and narrow path, from the village of Manaka, the visitor passes through patches of the most enchanting tropical vegetation,

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CHAPTER IV.

● 133 luxuriating under the cool shade of lofty forest
 [137] trees. The ascent is toilsome; and, after passing upward for a considerable distance, the traveller emerges upon an expanse of open country, with little else upon it beyond a withered covering of coarse grass. Reaching, at length, the ridge of the land, the whole scene suddenly changes. The eye sweeps the entire circuit of the island, the centre of which is occupied by a circular lake, studded with a few small islets. The sides of the lake are most precipitous, and only admit of approach to the water at one or two points. The crater lies on the north-west part of the island. It has evidently been upheaved from the lake itself, inasmuch as it forms a promontory extending into its waters; while, beyond it, there is a continuation of the main ridge surrounding the whole. The space, between this outer ridge and the crater, has been partially filled up by deposits from successive eruptions, thus forming a valley of hardened lava and loose ashes and scoria. The summit of the crater is much lower than the height of the island. So low, indeed, that the observer looks down upon it from all points, and would, but for the smoke, be able to see into the crater to some depth. The smoke was dense and murky. It curled and twisted, most singularly, about the gaping mouth of the crater for a while, and then shot up high into the air, accompanied by a dull, rushing sound. There was no appearance of flame while we were there. But huge boulders of scoria, and blocks of stone, lay scattered all over the ridge, as well as far down the smooth and shelving ground running down to the seaboard. Some of these stones were almost of fabulous size and weight. They bore silent but

VOLCANO IN TOFUA.

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certain testimony to the enormous power of those Titanic forces by which they had been hurled into mid-air, to drop miles away, from the crater from whence they had been disgorged.

While threading a way through the *débris* of ashes and stones, our attention was attracted by a jet of black smoke, issuing from a crevice in a rocky declivity, some yards below where we stood. We also became speedily and uncomfortably conscious that the ground beneath our feet was quite hot. Upon piercing it in a soft place with a walking-stick, a thin vapour was instantly emitted, while the point of the stick was coated with a black substance resembling coal tar or pitch. Nothing daunted by this, our companion, Bitá Vi, a native Missionary, at once made his way, with difficulty, toward the smoking rock, carrying a stout stick in his hand, and declaring that he would scrape away until he obtained a light. The attempt, however, failed. The intensity of the heat, and the softness of the ground, compelled him to desist, and beat a retreat. We were not sorry at it. No valuable object was to be gained; and he might have come to grief by persevering in his endeavour. The discovery we had made was an important one. It was evident that the subterranean fires of the volcano were extending far away from the original crater, on the opposite side of the island; and it was equally clear that, in the event of any outbreak where we stood, the village of Manaka beneath must necessarily be destroyed. Our guides were evidently much excited by what we had witnessed. Upon returning, therefore, to the village, we strongly urged upon the people the duty of removing at

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- 133 an early period, for safety, to one or other of the
[797] Haabai islands.

[166] For some months after this visit the signs of a coming rupture increased; and, by an express order from King George, the inhabitants removed from the island towards the close of 1851. At that period the waters of the lake were almost at boiling heat, and a large section of the cultivatable land was scorched up.

[797] But as no actual or serious eruption had taken place up to the close of 1855, at which time our residence in the islands terminated, it may fairly be supposed that the dreadful eruption of Late, during the course of the previous year, had given vent to the internal forces, so as to relieve the pressure from that particular locality.

Two more volcanic eruptions, of a different character from those already described, remain to be mentioned. They may be called oceanic volcanoes. In the year 1852 a large canoe was proceeding from Vavau to Tonga, carrying troops and arms, [724] [669] to join the forces of King George, in a war then raging, on the latter island. Those on board observed, a great fire to the westward of their course, when they were about half-way between the islands of Late and Tofua. Supposing it to be a ship on fire, they altered their course, and steered towards it. It soon became certain, however, that it was not a burning ship. The water was strangely agitated; and the fire evidently ascended from the sea itself. Greatly alarmed, and full of amazement, the crew again kept on the proper course. Immediately upon their arrival in Tonga, they reported what had been seen; but nothing further was observed until 1855. In that year the same singular

FORMATION OF TWO VOLCANIC ISLANDS. 93

appearance was witnessed by the writer and by hundreds of the people of Haabai. The smoke of this oceanic volcano was seen for more than a week, and it then disappeared. Its bearing was to the N.N.W. from the centre of Lifuka, precisely in the direction where it had been first discovered in 1852.

Now observe. In the track which was taken by the Missionary ship "John Wesley," during her annual voyage through the islands in August, 1857, a new island was discovered, whose position answers precisely to the locality where the before-mentioned phenomena were observed in 1852 and 1855: The following is an extract from the captain's Journal:—

"Thursday, August 6th, 1857.—Having left Tonga for Vavau the day previously, we at noon this day passed an island which has appeared above the surface of the sea within the last few months. The whole land, which is about sixty feet high, emits volumes of fire, smoke, and steam. Its latitude is $19^{\circ} 15' S.$, and longitude $175^{\circ} 8' W.$

"August 19th.—At 11 A.M., got under weigh and proceeded through the reefs for Tongatabu. At 2.30 P.M., passed a small rocky islet, that must have been thrown above the surface of the sea by volcanic action. It has never been seen before this voyage, either by myself or any of the Missionaries on board, all of whom have sailed in this neighbourhood before. At 6 o'clock got out clear of the reefs to sea.

"August 27th.—At 1.30 P.M. came upon what appeared to be shoal water. Lowered the boat to sound, but got no bottom with forty fathoms. We are now five miles S.S.W. from the volcanic island

● 133 we discovered on the sixth of this month. This discoloured water is caused by the stream of lava which has evidently flowed in this direction, as it is continued from this point up to its base. At 4.30 passed within a mile of the N.W. end of the island. Found it on fire all over. Shallow water running some distance from its S.S.W. point; otherwise, the land is bold and approachable."

In these statements, then, we have positive proof of the volcanic formation of two islands, one of which had at once assumed considerable dimensions. It will not fail to strike the reader, upon referring to the chart, that these two newly-formed islands stand nearly upon the same line of parallel with the main group of islands as the volcanoes of Tofua and Late, and at about an equi-distance between them. Also that the formative process, through whose agency they had at length been elevated so far above the ocean surface, had unquestionably been progressing during several years.

Many tangible proofs also of former volcanic action, in the shape of pumice-stone, and other materials, have been found buried deep in the soil, and have even been dug out of the solid coral rock, in the very lowest or most recent order of coralline islands. In the island of Lifuka, no part of which probably rises more than thirty feet above the sea-level, the writer has obtained beautiful specimens of pumice-stone from the solid coral underlying the alluvial soil. In Vavau, also, when digging and boring for water, which, unhappily, was never reached for want of necessary implements, similar evidences of volcanic action were plentifully met with, even at a depth of forty feet from the surface.

UPHEAVING OF REEFS.

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To the writer's mind, these facts afford convincing proof that the entire islands of the Tonga, or Friendly group, even the lowest of the so called coralline islands, are mainly of plutonic origin. That they form the summit or visible ridge of an extensive chain of submarine volcanoes cannot be doubted. It seems fair to conclude that to such agencies and processes of nature as we have been describing, accompanied by results so marked and peculiar, and occurring within the limits of a very few years, must be assigned the conformation, and even the existence, of the islands in bygone ages. How long a period has elapsed since the lowest of the islands have been thus formed, it is not for us to determine; but no geologist would carry the date back to a very remote antiquity. The case, however, is different with the loftier ones such as Tofua, Late, &c. These are coeval, probably, with the oldest structures of our globe, and are, so to speak, the great arsenals from whence, at the bidding of the Almighty Creator, new and habitable sections of the earth have sprung into existence in subsequent ages.

It may be said, however, that while the facts already noted sufficiently account for the origin and physical character of the plutonic rocks and islands, yet the question of coralline formations remains undisturbed. But we shall now proceed to show that such is not the case.

It is well known, to all voyagers in the Pacific, that, while navigating the Polynesian regions, the greatest care and watchfulness are necessary in order to discover and avoid new formations of shoals and reefs, that appear at short intervals of time. The very rapidity with which these changes occur, show

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● 133 clearly that they cannot be the product of insect architecture.

There exists, for example, a long range of coral reef lying between the north-western extremity of the Haabai islands and the Vavau group. The reef extends over about twenty miles, and is two or three miles in breadth. The writer has often crossed this reef, when tacking from one group to another. But, according to the testimony of natives, and of European captains, who have more recently been there, the reef has shoaled up so much in various parts, that the sea now breaks upon it, even during a very ordinary storm, and it is no longer safe to traverse it in vessels of any considerable burden. It would be absurd to attribute this sudden and recent change to the labours of the polypes.

The coral reefs of Polynesia will well repay a little of the reader's further consideration; especially when we consider that most imaginative, and even romantic, pictures of them have been given, both by the pen and pencil of writers who have not had the means, or who have not taken the trouble, to acquire correct information on the subject.

These reefs may be classified thus:—First, there are those which rise in isolated blocks, and at remote distances from other reef or island systems. Secondly, those which occur in groups or chains, and trend in the same direction as that of adjacent lands. And, lastly, those which serve as barrier, or shore, reefs to the islands they more immediately encircle.

Like the islands themselves, the reefs, under these several classes, will be found in all stages of

development. Some of them, within a certain limited depth, are crowned with forests of living coral, of all kinds, and in large masses. Others, again, having reached the surface, present only small and fragmentary specimens of the many varieties of coral. Isolated reefs are usually, but not always, of a circular form. When they have been upheaved to the low-water mark, they generally contain in the centre a lagoon of smooth water of varying depth; or else the interior becomes filled up with deposits of sand, and of coral, that has been ground to powder by the action of the sea. The circular form, and the interior bason, of these reefs is, to our own mind, conclusive evidence that they are not the product solely of insect labour, but that they form the crests of oceanic volcanic cones, whose action, and further upward progress and extension, has been checked by the eruption of the ocean, with a force superior to that of the volcano itself. Some of the reefs of this class are exceedingly dangerous to navigators. If they lie below the surface, at a depth of five or six fathoms, many minutes may elapse before any sign of their presence appears. But suddenly the sea swells above it in one huge wave, and, rising high into the air, it curls over and breaks with tremendous fury. This phenomenon is caused by the resistance which the sea meets with in its impact upon the abrupt and perpendicular walls of the reef beneath; and no vessel, however strong, if it should happen to steer upon the spot during the minutes of deceitful calm, could possibly survive the shock of those sudden reef waves.

The writer was himself nearly lost in this way, when voyaging in an open boat, accompanied by a crew of four natives, from Haabai to Tonga. The

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797 proximity of such a reef in our course was known ; but it was thought that we were steering in a direction sufficiently wide from its supposed locality. Nevertheless, a bright look-out was kept. The night was beautifully clear, with the moon nearly at the full. Leaning my head upon the gunwale, I was scanning the open sea in the distance. Suddenly I observed a peculiar swelling in the water ; and had just time to shout, to the man at the rudder, to put the boat about, when a sound like rolling thunder saluted us, only some hundred yards in advance of our position. It proved to be the very reef we had been trying to avoid ; and, most likely, had the night been dark or tempestuous, we should there have become food for the rapacious sharks. But to a gracious Providence we were indebted, on this occasion, as on many others of a like description, for turning aside the fatal hour.

133 Of the second class of reefs, viz., those which are found in groups, or in a continuous chain, it is only necessary to observe that throughout the Pacific, as well as within the limits of the Friendly group, they follow the same law of polar inclination, which so clearly marks the physical arrangements of the islands themselves.

Of the third class or shore barrier reefs, a few points of interest may be named. According to Mr. Ellis, the author of "Polynesian Researches," they are generally "a mile, or a mile and a half, and occasionally two miles, from the shore." We presume that his remark applies, more particularly, to the Society Islands. In Tonga the shore reefs do not occur at such great distances. Hence there are none of those wide lagoons there, into which vessels may be steered, as into a harbour. The

OPENINGS IN REEFS ACCOUNTED FOR. 99

anchorages for ships are generally *outside* the shore reefs, but they are well protected by other and isolated reefs beyond. The shore reefs in the Friendly group very seldom exceed a distance of two hundred yards from the land, and these instances are rare. The average distance will be about fifty yards; but in many instances much less. 133 (504)

Another statement, made by Mr. Ellis, in reference to the reefs which came under his notice, will not apply to those of Tonga, and of other parts of the Pacific. He states that "in each of the islands, and opposite the large valleys, through which a stream of water falls into the ocean, there is usually a break or opening in the line of reef that surrounds the shore,—a most wise and benevolent provision for the ingress and egress of vessels, as well as a singular phenomenon in the natural history of these marine ramparts. Whether the current of fresh water constantly flowing from the rivers to the ocean, prevents the tiny architects from building their concentric walls in one continued line, or whether in the fresh water itself there is any quality inimical to the growth or increase of coral, is not easy to determine; but it is a remarkable fact, that few openings occur in the reefs which surround the South Sea Islands, excepting opposite those parts of the shore from which streams of fresh water flow into the sea." 133 114

Now, in none of the Tonga islands are there any streams of water flowing into the sea; and yet, various openings in the reefs to the ocean exist. This is also the case in other parts of the Pacific: and, indeed, there are few of the low-lying islands that can boast of even the smallest rivulet of fresh water. We must, therefore, seek for some

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[114] other explanation of the existence of these deep-sea channels. To our own mind the simple, and most natural, explanation would be, that, wherever a weak part in the barrier reef has presented itself, there the sea has made an inroad, breaking down its wall, and gradually deepening the course it has so formed. It no doubt does so occur, under Providence, that some of these gaps face those indentations of the shore from whence flowing streams debouch into the sea; but as there are so many exceptional cases, no satisfactory argument can be based upon that circumstance. Indeed, it is well known that similar openings occur in reefs which do not surround any land at all.

It is also remarkable that in many of the more elevated volcanic islands, no barrier reef exists. Such is the case at least in the Friendly group. The question therefore naturally arises, Why should these reefs be found encircling the low islands, while they are not found also in the vicinity of the others? The simple answer would seem to be, that Divine Providence has so ordered it, that the lower islands, which require protection, should have it; but that where the height and greater solidity of others rendered such protection needless, there it should not be bestowed. But, granting that the arrangement must be resolved into the Divine will of the Creator, is there not some secondary and natural explanation of the fact, which may equally exhibit the wisdom and the power of God? We believe there is.

To us, the idea seems untenable that the polypes, by an instinctive intuition, shun the sturdy volcanic islands, while they hug the shores of the more tiny and exposed ones, that they may rear walls of

ABSENCE OF BARRIER REEFS. 101

safety around them. But if we adopt the theory already propounded, of a volcanic origin for *all* the insular systems of Polynesia, then a satisfactory solution may, we imagine, be found. 133 ●

Supposing the fires of an oceanic volcano to have such force and impetus as to resist and overcome the quenching action of the sea, and that it progresses, until it not only reaches the surface of the ocean, but likewise throws up the solid basis of an island in its centre, is it not self-evident that just in proportion to the extent of the reef-circle, or, in other words, the ridge of the volcanic cone, and the dimensions of the central land so formed, will be its distance from the outer rim, or barrier-reef, formed by the conical ridge? And providing the volcanic process proceeds, as in the case of the new islands in Haabai, formed in 1857, until such altitudes are reached, as those which belong to the higher islands, does it not inevitably follow, by the laws of gravitation, that the original boundary of the volcanic cone shall be filled up and overflowed by the continuous streams of lava? Thus, instead of any barrier reef at all, the sides of these mountainous lands shall descend rapidly, and, indeed, perpendicularly, into profound depths of ocean. Such, in fact, is the condition of the coast of many of the Plutonic formations; and this we conceive to be the only plausible explanation for the absence of the usual coral belt.

To what extent, then, do we believe in coral architecture? or what is the peculiar position and vital work of the polypes? Our answer is, that, so far from building up the coral formations from the "deep abysses of the ocean," as stated by the most recent writer on "Coral, and the Coral Maker,"

- 133 they only begin their life, and perform the functions assigned them in nature, upon the surfaces of those volcanic ridges which have attained an elevation such as suits their habits and organization; and that, even then, they are only *assistants*, and not *principal agents*, in the deposit of the coral rock itself. Did the polypes build up from the great depths supposed, evidence of the fact could be obtained. But all evidence proves the very contrary. In a "Report on some Islands and Reefs
- [113] in the South-western Pacific, by Captain H. M. Denham, R.N., commanding H.M. Surveying Ship 'Herald,' " we have the following important facts stated. Having landed upon and surveyed two extensive reefs, named by him the North and South Minerva, which lie nineteen miles apart, in latitude $23^{\circ} 37' 19''$ S., longitude $178^{\circ} 48' 58''$ W., and latitude $23^{\circ} 56' 22''$ S., longitude $179^{\circ} 4' 16''$ W., he proceeds to say:—"I obtained soundings, and brought up the bottom at nine hundred and sixty-seven fathoms, about midway between them. The greater part of this sounding consists of the shells of many microscopic species of *foraminifera*. It also contains several specimens of a *styliola*, abundantly taken everywhere in the Pacific in the towing net. Mixed up with the sand, there are a few fragments of dead slender *cellepora*, a piece of a *bulla*, one perfect and several imperfect plates of a *balanus*, and several minute detached crystals of smoky quartz, prismatic, and terminated by five-sided pyramids." Again: "On the way from Moala to Angau (Gau), I placed the ship alongside of the intervening reef Mumbolithe; and, by boats, determined its features and relative positions. It proved to be of coralline structure, awash at low

STRUCTURE OF THE CORAL BED. 103

water, presenting an oval rim; the smooth pool within not accessible. Between this reef and the boundary reef of Angau (Gau), five miles and a half apart, I obtained soundings, (coarse white coral grit,) in seven hundred and fifty-three fathoms; each reef being so steep as to give no soundings in two hundred fathoms half a mile off." In other deep-sea soundings, between, and in the immediate vicinity of, reefs, the same results were obtained. These soundings prove the non-existence of coral formations at the depths named; and they also plainly indicate, by the presence of quartz rock, the existence of other formations of a totally different nature.

As to the surface structure of the coral bed, we can agree with the author of "Coral, and the Coral Maker," in so far as to express our belief, from observation, that "the coral animal does not *make* the coral,—at least, in any proper sense of the word. It grows, just as much as our own bones grow, and quite as independently of the will of the polype. All that has been said and sung, therefore, about the ingenuity of the little polype as an architect, about its industry and important labours, goes for nothing. It is really no more an architect than an oyster; and its coral-making is in no sort to be regarded as an act of labour."

Bringing, then, together, all the facts we have advanced, to what other conclusion can we come, than that the origin and development of the insular system of the Pacific Ocean must be attributed mainly, if not entirely, to the operation of volcanic causes? Considering, also, the number of vast changes that have been effected in the course of fifteen years, in one particular locality, it does not

● 133 appear improbable that, at no very distant period, these potent and active powers of nature may deck the bosom of that wide sea with miniature continents; or even that some of the great severed groups may become united, and form ultimately another division of the globe. Apart from mere speculation, it may be safely declared, that the necessary agency is even now extensively and actively at work, and it only waits the command of Omnipotence to do it.

There is no reason to suppose that the region of the Friendly Islands is the only one in the Pacific where these notable events are transpiring. Other parts of Polynesia would, if better known and explored, give similar results. And, unquestionably, as our knowledge of the various groups, and their inhabitants, increases and becomes more defined, additional evidences will be forthcoming, to illustrate and substantiate the position we have advanced, namely, that, in the Pacific Ocean, there is now actually going on a variety of changes, in the geological structure and condition of the "dry land," such as may be traced in all the primitive developments of our globe. There is, indeed, no finer or fresher field in the world than this for geological explorations. Merchants, hydrographers, botanists, and *savans*, of various orders, have reaped rich harvests of knowledge in Polynesia; but the patient and intelligent labours of the geologist are yet required. There are many important questions, respecting various phenomena in these distant and secluded parts of the earth, which can only be determined, and settled, by the facts which an able, and observant, geologist could collect and analyse.

Upon one point, however, we would in conclu-

FORMATION OF REEFS.

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sion, venture an opinion. It is the writer's belief that there is a large excess of the *formative* over the *destructive* elements that are so ceaselessly operating among the insular structures of Polynesia. It cannot, indeed, be matter of surprise that the sea has encroached upon some of the islands, or that some of them should have been entirely swept away. When we remember how little above the sea-level many of them rise, and to what a sweep of ocean they are exposed, notwithstanding the barrier reefs which Divine Providence has thrown around them for protection, the wonder is that such instances have not been more frequent. In hurricanes, also, the sea generally rises far above its wonted level, and rushes with overwhelming fury upon the shore. Owing to this cause, several small islets have been swept away belonging to the Tonga group. One such case occurred so recently as the year 1847 in the Haabai Islands. Examples of this kind may be rare, but they nevertheless illustrate, and confirm, in part, the opinion of Sir John Herschel, who says that "the sea is constantly beating on the land, grinding it down, and scattering its worn-off particles and fragments, in the state of mud and pebbles, over its bed. Geological facts afford abundant proof that the existing continents have all of them undergone this process, even more than once, and been entirely torn in fragments, or reduced to powder, and submerged and reconstructed." Some demur may be made to a portion of this statement; but in the main fact it is no doubt correct. Of the "grinding down" of rocks by the action of the sea, there are notable examples in the Friendly Islands. In all those which have a rocky coast fully exposed, without the protection

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133 of an outer reef, the sea will be found to have cut
134 into the solid face of the rock, below high-water
mark, to a greater or lesser depth, according to the
age of the land, or the position in which it is
exposed. In many places the face of the rocks has
thus been corroded, or chiselled away, to the depth
of several yards; and the effect is both singular
and terrific, when the waves rush under the ex-
cavated cliffs. They rebound from beneath with
a hissing and heavy surge, as if angry at the
obstruction from which they recoil, but upon which
they are making slow and certain inroads, at each
repeated advance. The age of many of the islands
could undoubtedly be determined, almost to a
nicety, were there proper facilities for making any
lengthened observations on the amount of abrasion,
caused by the action of the sea, during a given
period of time.

000 But admitting, as we do, the existence and
ceaseless action of these destructive elements and
powers, we are still disposed to maintain that the
formative process is far more extensive, and rapid,
in its range and effects. Underlying the un-
fathomed depths of the sea, the solid crust of the
globe is wrought upon by the pent-up energies of
hidden fires. These, here and there, rend the thin
girdle of solid matter that confines them. Myster-
ious substances are then disgorged in immense
masses from the womb of nature. These are
secretly and slowly piled, heap upon heap, layer
upon layer, from the sea bed, until they finally
emerge above the surface. They then undergo
another process in their strange construction. The
wind, and the waves, bring stray seeds, and waifs,
from the surrounding world. Soil is gradually de-

CHAPTER V.

000 ABSENCE of running streams—Underground stream in Feletoa—Capabilities of Vavau for affording an abundant supply of water—Native wells and bathing-places—Number of fair and rainy days—General character of the climate—Hurricanes—Earthquakes—Saline lake in Nomuka—Its peculiar fish and preservative qualities—The *Tridacna gigas*—Shells and Shell-fish—Varieties of fish, and methods of taking them—Freedom from venomous snakes—The Tukahali, or sea-snake—Indigenous and foreign animals—Birds—Insects—Native methods of escaping the mosquitoes.

133 ALLUSION has been made to the remarkable
312 absence of running streams, or rivers, in the Friendly Islands. There are only two very insignificant exceptions throughout the whole group. These occur at Vavau and Eua. That at Vavau is an underground stream, situated near Feletoa. It is reached, with difficulty, by descending a considerable depth into a natural cavern, that can only be explored by the aid of flambeaux. In seasons of extreme drought, the natives, and the Missionaries, have been accustomed to supply themselves from this source. The water is exceedingly pure, and of most delicious coolness. Its underground course cannot be traced; nor has it any visible outlet to the sea. There are, however, various spots around the shores of Vavau, where fresh water percolates through the rocks; and where, in a few instances, it flows in slender
312 streams. Proposals have been often made to obtain, by blasting, a free and pure supply, not only for the benefit of the people themselves, but also for the foreign shipping visiting the island.

HURRICANES.

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diminishes the vigour, or shortens the life of a Missionary, or that of his family, can be an economy in the long run. 342
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The islands are liable to hurricanes, which seem to recur, with periodical regularity, and always in the rainy season, from December to March. There are gales every year in those months, both heavy and destructive enough; but the full force of the cyclone falls, upon one or other of the three groups, at intervals of about seven years. The hurricane gives but few indications of its approach. The wind rises suddenly, accompanied by heavy rain, and its duration, strength, and progress, in any given locality, depends upon its being nearer to, or more remote from, the centre of the wind circle. No tongue, or pen, can possibly convey an adequate idea of these visitations. Heaven and earth appear to be on the move; and, as for the sea, its grandeur is altogether indescribable. The rush of the irresistible tempest;—the cracking and fall of trees on all sides;—branches hurled through the air;—cocoa-nuts torn from the trees and flung in all directions with the velocity of cannon-balls;—a deluge of rain;—unusual darkness;—and the crash of falling houses;—all these attendants upon a hurricane make up one of the most dismal and terrific pictures in natural phenomena. The destruction of dwelling-houses, and other buildings, usually attendant upon these visitations, must however, be attributed not merely to the force of the wind, but also, in great measure, to the torrents of rain. During a recent hurricane in Vavau, thirty-four out of thirty-nine chapels were blown down; and yet these buildings were the very best and strongest constructed by the people. The

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132 fact is, the heavy rain soon saps the foundation of the large posts upon which the security of the building depends. Gradually the wind sways the superstructure to and fro, and at every gust, opens and widens the earth around the sockets of the posts, until the entire fabric loses its equilibrium, and coming down with a crash, all its posts and beams, however tough and thick, are snapped like so many carrots. Nevertheless, instances have been known in which posts, two feet in diameter, were broken off short by the surface of the ground, where their sockets had been imbedded in solid rock.

133 All the islands are subject to earthquakes, which are both frequent and violent. This might naturally be expected from the proximity of so much continuous volcanic action; but their occurrence produces very little alarm. The native buildings cannot be overthrown, and hence, beyond the awe with which the earthquake is calculated to inspire every mind, there is no sense of personal insecurity. Although they are, at times, so violent as to detach large portions of stone from the face of the cliffs, we never heard of any fatal, or even disastrous, consequences resulting from them. One of the gods (some say Maui, and others say Lofia,) is said to be reposing in the heart of the volcano at Tofua, and that the earthquake is either caused by the excessive nodding of the deity, or by the act of turning from one side to the other, when too much irritated by the effects of his fiery bed. Whichever it may be, the natives invariably raise a great shout, during the continuance of the tremulous motion, for the purpose of thoroughly awaking the Plutonic deity, lest his nodding and uneasi-

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SALINE LAKE IN NOMUKA.

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ness should, unhappily, overturn the world altogether. This custom still prevails; although the belief of the native mind, as to the supposed cause of the earthquake, has long since been abandoned.

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In addition to the fresh-water and other lakes already enumerated, in connexion with several of the volcanic islands, there is one at Nomuka, in Haabai, having certain saline properties, exceedingly worthy of notice. There is also another, in the western district of Vavau, but it has no special peculiarities, and it is of no great extent.

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That at Nomuka occupies the centre of the island, which, although not more than one hundred feet in elevation, is evidently of volcanic origin. Following the shape of the island, the lake extends lengthwise in an oval form. Its depth is remarkably varied, being in some places only a few feet, and, in others, as many fathoms. The water is intensely brackish, and, in taste, is not unlike a strong solution of Epsom salts. There is no visible connexion with the outer ocean, and no perceptible rise or fall of the water.

A peculiar fish is found here in great abundance. It differs from all known in the adjacent sea, and it has the property of remaining perfectly fresh for an entire day or more, while all other kinds go bad, in the course of two or three hours, in consequence of the extreme heat. After being once cooked, the *ava* will remain eatable for a number of days: and hence it is in much request, by the natives, when on their voyages, as an article of provender. Indeed, the lake may be regarded as a fish preserve, inasmuch as it is placed under certain restrictions in favour of voyagers. No

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136 doubt the strong saline constituents of the lake
 133 act, upon the substance of the fish, so as to prevent
 rapid decomposition. Singular to say, however,
 this is not indicated by anything peculiar in the
 [262] taste. Indeed, the *ava* is greatly esteemed for its
 dainty and luscious qualities. The fish attains
 136 a length of two and a half feet, when full grown.
 It seems to belong to the salmon family; but its
 flesh is white, and the skeleton of the fish displays
 an infinite number of fine cartilaginous bones
 ramifying its entire fleshy substance.

Numerous and perfect specimens of the shell of
 the *Tridacna gigas* are also found, around the
 borders of the Nomuka lake, *buried in the soil of*
its banks. No living specimens of this mollusk are
 obtained from the lake itself, nor are they found,
 so far as we know, in the adjoining sea. One
 shell, which we dug out of the loose clay and
 gravel composing the banks of the lake, measured
 a little over three feet in length, by nearly sixteen
 inches in width. Although the species is said to
 have been met with by the French naturalist
 accompanying the "Astrolabe," as stated in the
 published zoology of that exploring expedition,
 yet it is probable that the shell, obtained in Tonga;
 was only one of those from Nomuka. At all
 events, the living mollusk was never met with by
 us, during a ten years' residence, although there are
 several varieties of *chama*, of large size, very com-
 mon amongst the different islands.

237 There is a fair variety of both salt-water and land
 shells, but none perhaps that are peculiar or confined
 to Tonga. Several sorts are much used by the natives
 in ornamenting canoes and houses, as well as in
 decorating their persons. The chief of these are, the

CHAPTER VI.

RICHNESS of the soil—Native method of manuring—Banana Plantations—Bread-fruit and native bread—Varieties of edible fruits—The Coffee-plant—The yam, and method of its cultivation—Other edible roots—Kitchen vegetables—The Cocoa-nut tree, and oil manufacture—English manufactory at Foa—Cotton-growing in Tonga—Native ideas of labour—Timber trees.

THE soil of the low islands is composed of a rich black mould, with more or less of admixture with sand, according to the distance from the sea. This black mould, formed chiefly from decayed vegetation, ranges from three to six feet deep. In the higher lands the soil varies from that of the black mould to a tolerably stiff yellow and reddish clay. Speaking generally, the arable soil rests either immediately upon the surface of a conglomerate coral rock, or else upon an intervening stratum of light clay and sand. Such is the natural fertility of the land, and such also the rapidity with which vegetation grows and decays, under these tropical skies, that the natives never think of employing artificial means to improve the soil. They have, nevertheless, a good knowledge of some of the best principles of agricultural science. They understand the necessity for a rotation of crops, and regularly practise this in regard to yam plantations. At suitable intervals they plant the yam grounds plentifully with banana trees; by which plan several great advantages are secured for succeeding crops. The herbaceous nature of the trunk of this tree, and the extent of surface presented by the immense leaves, tend to accumulate and deposit a

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[p. 129]

CHAPTER VII.

THE harbour of Vavau, or Port Refuge—Suitability for a Naval Rendezvous—The first steam-ship across the Pacific—Rise of Christianity in Vavau—Finau Ulukalala—A sailor's letter for a Missionary—Finau persecutes the Christians—The first disciples—Their sight and conduct in Haabai—Taufa-ahau visits Vavau—Ulukalala's conversion—Burning of heathen temples and idols—Wrath of the heathen—Attempted war—A bloodless victory—Death of Ulukalala—Accession of King George—A great religious awakening—Attempt by the Romish Priests—The first code of laws—State of Vavau in 1846—Another great religious movement—Permanent results.

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(103) THE harbour of Vavau has been long known to the English Admiralty by the name of Port Refuge. The soundings given in the accompanying chart, are what were taken by Captain Bethune, of the Royal Navy, 133 when in command of the "Conway" in 1838; but 114 the sketch of the harbour then made was inaccurate 504 in several particulars. These errors have been corrected in the present chart; but the scale of its projection would not admit a view of the coast and islands, to the eastward. As, however, that side of the group is rendered utterly unapproachable by ships, in consequence of extensive reefs, the omission is of the less moment.

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133 There are two entrances to the harbour, both of which are perfectly free from dangers. The widest is that to the north-west. The other lies to the south-west, between the islands of Huga and Niua-babu. That channel is only about three-quarters of a mile wide, but it is deep, and entirely free from obstructions. We entered, in the "Triton," by that from the north-west. Passing between two

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[Facing p. 144-B]

THE HARBOUR OF VAVAU.

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bluff and precipitous rocky islets, that seem to stand as sentinels over the sea-gates, we skirted the Vavau coast, having the towering cliffs of Mouga Lafa on our left, and the island of Huga on the right. Upon doubling the headland of the former, the natural formation and exquisite beauty of the harbour began to unfold before us. Behind lay Huga and Niuababu, shutting out from sight the distant and lofty peak of Late, while, at the same time, effectually protecting the harbour from the heavy swell of the sea, from the west and south-west. On the right lay the bay of Niuababu, formed by the eastern shores of that island, and the western side of Falevai. Several small islands lie in this bay; and its southern extremity is bounded by a shoal reef, extending across the strait, between the two islands just named. The reef has no opening, and is only passable by boats at the time of high water. No correct survey of the bay has been made, but it is clear of sunken rocks or reefs. Anchorage can be found in front of Falevai, and, probably, in the vicinity of the small islands. But a glance at the chart will show, that in the event of a gale from the north, or north-west, the bay would not afford a safe shelter for shipping.

The northern extremities of Niuababu, and Falevai, consist of high and perpendicular cliffs, crowned by thick woods and groves of cocoa palms. The sloping highlands of Hihifo are also covered with dense and rich vegetation, to within a few feet of the sea. The only bare spot is that which forms the table-land of Mouga Lafa.

Leaving Niuababu and Falevai behind, and keeping a course to the N.N.E., the harbour be-

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504 comes narrower, and appears to be terminated by
133 the high hill of Talau. But, after passing the
beautiful sandy shores of Utugaki, white and glis-
tering in the sunlight, and getting abreast of the
small island of Lotuma, the bay of Talau opens out
to view on the left. The usual anchorage lies be-
tween Talau and the island just named; but if the
wind be well to the southward, even a large vessel
may safely stand on, past the south side of Talau,
by a narrow but deep channel, lying between that
hill and the sandy point of Utulei. That being
passed, the ship may be brought to anchor, in front
of the chief town of the island, in a fine bay that
is, apparently, perfectly land-locked. Neiafu being
the name of the town, we shall call this sheet of
placid water Neiafu Bay. In Captain Bethune's
chart, this bay is represented as quite land-locked,
whereas there is a narrow opening, between Vavau
and Bagaimotu, at the head of the bay. This
opening is only a few fathoms wide, and is avail-
able by small boats at the time of high water.
Small as it is, the channel is extremely valuable,
seeing that it affords the most direct route of
communication from the harbour to the whole of
the islands, which lie among the numerous and
dangerous reefs to the eastward.

000 Should these islands ever become of such im-
portance, by the development of their rich natural
resources, as to induce the resort thither of a large
European population, Vavau will, unquestionably,
be a place of no mean name and value. The
energy and wealth of an enterprising community
would soon transform its lovely bays and coves,
into one of the most commodious and enchanting
harbours in existence. Its natural formation is

SUITABILITY FOR A NAVAL RENDEZVOUS. 151

such, as to secure all those advantages which engineering skill could easily turn to good account, and with comparatively small outlay of capital. The water is of sufficient depth, even close to the edge of the undulating shores, for vessels of the heaviest tonnage; and, consequently, there would be no great difficulty in the construction of extensive wharves. 000 [133]

Vavau would answer well in all respects, either for a naval rendezvous, or for a steam-ship coaling station. Should the route of communication with this country from Sydney, across the Pacific *via* Panama, be fairly established, this place, with all its natural advantages of easy and safe entrance and egress, and its many internal facilities, ought to command the attention of those chiefly interested in the movement. Both Fiji and Samoa have been talked of; but in neither of those groups can any harbour be found at all comparable to that of Vavau. As none of the Pacific islands yield any coal, the depôts would be supplied from Australia; and, therefore, the eligibility of this, or any other harbour in the South Seas, must be determined by the cost of transit, and suitability of position.

The distance of Vavau from Sydney is about 1,800 miles. The line of navigation from Australia thence, is more open and safe than either that to Fiji or Samoa. It also lies more directly on the route from Sydney toward the American continent; while the course of navigation from Vavau, onward across the Pacific, would be more clear than it would be from either of the other two groups named.

It may be observed, also, that the needful arrangements for the establishment of calling stations,

ANOTHER GREAT RELIGIOUS MOVEMENT. 165

were observed and honoured; while the general morality of the people was such as commanded the admiration of all right-minded visitors, although it had, more than once, elicited the bitter sneers of lascivious and unprincipled men, who in former times, when visiting these shores, rioted in unbridled and unchecked lust. 797
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In this year also, another season of spiritual power had come. The awakening began in the same village of Utui, where that of 1834 commenced: and like the former, this also broke out under the preaching of a native. Several events had recently contributed to deepen religious feeling, where it already existed, and to produce anxiety in the minds of the careless and ungodly. Out of 797
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133 four Missionaries one only remained. One had died under peculiarly distressing and sudden circumstances; another had been compelled, through failure of health, to vacate his post; and lastly, in March, 1846, the people had witnessed the holy and happy end of the Rev. Francis A. Wilson, a Missionary who had been greatly esteemed and beloved, both by his colleagues, and by all the people. About the same time, the terrific eruption took place at Fonua Lei, of which an account has already been given. For more than two weeks the islands of Haafuluhao were rocked, night and day, by the most alarming earthquakes. During part of that time, the shocks recurred at intervals of only ten or fifteen minutes. The inhabitants knew not what might happen at any moment, and the stoutest-hearted quailed in the presence of phenomena so grand and awe-inspiring. All these various occurrences were overruled and accompanied by the power of the Holy Spirit, 133
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133 until the question came earnestly from hundreds
781 of the people, "What must we do to be saved?"

797 Upon landing at Neiafu we were cordially wel-
781 comed by the people, and we found the Rev. Peter
Turner, almost worn out by the incessant toils and
excitements of the previous few months. Day and
night he had been ministering the Word of Life;
and for weeks together he had been absent from
his home, visiting all the towns and islands in
succession, that he might, by his personal labour
and oversight, direct, or check, where necessary, the
outburst of religious feeling that was sweeping over
the entire population.

Although the Tonguese are naturally a very
stately and reserved people, it could not be ex-
pected, that such an extensive religious movement,
embracing all ranks and every description of cha-
racter, should be entirely free from objectionable
features. Nevertheless, the amount of real good
done was great and indisputable. Many of the
worst adversaries of the truth were truly converted;
and not a few of these very men are now employed,
as Christian ministers and teachers, on important
Stations in their own land, or else in Fiji, Samoa,
and in other regions.

797 these we took with us, and the remainder we divided, according to Tonguese custom, among suitable parties in the place.

Immediately after disposing of the food, we sailed for Tauga, a small but very beautiful island, on which the families of a few fishermen reside. We reached it about noon. Our visit being expected, the people were all prepared for Divine service, which was held at once. After preaching, I met the members, and then started for Ovaka at two o'clock P.M. This latter place is the most distant of all our preaching-stations in Haafuluhao. Being anxious to reach in the evening another island, where we had arranged to sleep, I did not preach at Ovaka. However, I met all the members, and spoke to every individual on spiritual subjects. This occupied me fully until about sunset, when we again embarked, and sailed for Huga. Favoured by a strong breeze, we reached the entrance to an inlet or bay of this island, of which I had never before heard. On former visits, our boat had been

• [133] run into a rough and wild-looking cave, situated towards the north-east end of this island, where there was only space sufficient to prop the boat up on the rocks, beyond the flow of the tide. We were generally carried through the sea, by one of the boatmen, from the interior of the cavern, to a rude ladder hanging over the face of the rocks, by which alone we could reach the surface of the land above. We were not sorry, therefore, to find that [504] the island had a more convenient landing-place in the bay at the south-east end, although it is only available at the time of high water, owing to a reef stretching across the mouth of the inlet, and which is left bare at low water. We

133 Near the north-western extremity of this island there is a natural cavern, the only entrance to which is considerably under water, even at the lowest ebb of the tide. I believe this cave to be the same of which the late Mr. Marriner speaks in his "Tonga Islands," and which he states is situated on the western coast of Huga. The mistake, as to the locality, might easily be made through a lapse of memory, and owing to the proximity of these two islands to each other. At all events, a traditionary history of the hidden cave at Niuababu is given, which corresponds substantially with the account of that said to be at Huga.

173 A certain chief, having become obnoxious to the King of Vavau, was condemned to be taken out to sea and drowned, while his family and immediate relatives were ordered to be massacred. A young chief, who had long loved the daughter of the condemned man, hearing of the king's purpose, hit upon a very singular scheme by which he at once saved the life of his beloved, and secured her for his bride. While pursuing his avocation of fishing, he one day came suddenly upon a turtle sleeping on the surface of the sea, close under the cliffs of Niuababu. Alarmed by the approach of the canoe, the turtle darted under water; but the young chief, determined on its capture, dived also, and, following hard after the creature, was led into the submarine entrance through which the turtle darted into a large cavern above, where the brave pursuer managed to secure his prize. Although much astonished by the discovery, he kept the affair a profound secret. But now that the object of his long-cherished affection was in danger, he thought

BYRON'S POEM OF "THE ISLAND." 191

this secret cavern would afford a safe asylum from her cruel enemies. Accordingly, he flew to her abode, and offered, under the favouring darkness, to become her deliverer, if she would only trust to his honour, and escape with him to the hidden cave. She at length consented, and, following his directions, she dived after him and rose within the strange place, where she remained concealed for a length of time. Here she was tended and frequently visited by her enthusiastic admirer, until a fitting opportunity came for restoring her to the light of day, and making her his wife. Whatever may be said of the tradition, of the existence of the cave there can be no doubt. Jone Faubula, one of my own boat's crew, had once performed the feat of entering it, but could give no particular description of the interior, owing to the prevailing darkness.

Lord Byron has wrought up this native tradition, together with some incidents connected with the mutiny of the "Bounty," into one of his least offensive, and perhaps least effective, poetical romances, entitled "The Island." If we may judge of the interior of the cavern at Niuababu, by the appearances presented in another, on the adjoining island of Falevai, then the description given by the poet will not be an exaggerated one:—

"Deep,—deeper for an instant Neuha led
 The way, then upward soared—and as she spread
 Her arms, and flung the foam from off her locks,
 Laughed, and the sound was answered by the rocks.
 They had gained a central realm of earth again;
 But look'd for tree and field, and sky, in vain.
 Around she pointed to a spacious cave
 Whose only portal was the keyless wave.

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"Wide it was and high,
And showed a self-born Gothic canopy.
The arch, upreared by nature's architect;
The architrave some earthquake might erect;
The buttress from some mountain's bosom hurl'd,
When the poles crashed, and water was the world;
Or hardened from some earth-absorbing fire,
While yet the globe reek'd from its funeral pyre;
The fretted pinnacle, the aisle, the nave,
Were there, all scooped by darkness from her cave."

Unlike the cave at Niuababu, that of Falevai may be entered by an ordinary whaling-boat, without even striking the mast, when the weather is moderate and the wind favourable. Upon gaining the interior, the visitor finds himself surrounded by beautiful stalactites hanging from the roof, and descending the sides of the cavern, like the tracery and pillars of an old cathedral. The sea within the cave is pellucid as the clearest crystal, and the shells and fish below are seen reflected upwards, by the light from the entrance striking upon the white sandy bottom. At the innermost recess of the cavern, there is a ledge where a landing can be effected, and from whence a wide fissure extends back into the solid rock. This fissure is high, and contracts greatly as it recedes, so that we could not determine whether it opened out upon the surface of the land above or not. The bottom of the cleft is covered with a considerable deposit of rich guano, indicating that the cave is resorted to by large numbers of sea-birds. It is certainly not a little remarkable that so many of these caverns should exist along the coasts of the islands of Haafuluhao.

Wednesday, 30th.—Niuababu. Assembled the female members of Society in the chapel, and, having addressed them individually and collectively, we afterwards held a public prayer-meeting, 797

000 ants, until the time of our own visit thither, and for many dreary months of suffering after that.

Having thus glanced at the main facts connected with the rise and progress of religion in the two Niuas and in Uvea, we now proceed with the details of our own voyage thither; upon which occasion I was accompanied by my esteemed friend and colleague, the Rev. Walter J. Davis.

797 We sailed from Vavau on Monday, June 6th, 1848. Passing in the immediate vicinity of the ruined and still burning island of Fonua Lei about three P.M., we stood on, and reached Niua Tobutabu on the following day, about eleven A.M. The

● 133 island is about six miles long, and two broad. There are several tolerably high hills in the centre, but otherwise the land is low. The population

[162] consists of about six hundred or seven hundred people. Toward its western extremity, the island is divided by an inlet of the sea; and there is, in that direction also, an immense sandy flat, stretching away toward another lofty conical island, called Tafahi, which lies about seven miles distant from Niua Tobutabu. Tafahi is certainly an extinct volcano, and it attains an altitude sufficiently high to make it plainly visible from a distance of fifty miles.

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114 Niua Tobutabu is the Keble's Island of English charts; and Tafahi is, probably, that known as Boscawen's Island. The latter name has been sometimes assigned, in the charts, to Niua Foou, which is evidently a mistake; for its relative position will not correspond at all with that describing Boscawen's Island. Considerable difficulty is felt in identifying this island, as well as many others in the Pacific Ocean, whose position has not been properly defined, owing to their remoteness

STRANGE MODE OF FISHING.

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in shore, even with that depth of soundings. But although the weather was fine when we arrived, the very heavy swell put anchoring out of the question. The boat was therefore lowered, and being deeply laden with boxes of books, slates, &c., &c., ourselves, and the native teachers, with the boat's crew, we made for the shore.

A strange sight here presented itself, for which we were quite unprepared. About thirty men were observed in different parts of the sea, at distances ranging from one to two hundred yards from the shore, each carrying a short bamboo cane with a fishing-line attached, and a *finaki*, or fish-basket. They had no canoes, but were swimming, or standing as one does when treading water, pursuing their avocation. Each man had a kind of life-buoy, made of several large joints of bamboo, from which he received partial support, and to which also his various fishing-lines were attached. These he drew up, from time to time, and deposited the spoil, if any, in the basket slung over his shoulders. Such is the rugged and dangerous nature of the coast, that it is only on very rare occasions that canoes can be launched for fishing purposes, and therefore the mode described above is regularly practised. The fishermen appeared to be at perfect ease in the briny element; and, as our boat passed along, they tendered us the usual salute, and then, hauling up their lines, they swam toward the shore to assist in the dangerous process of our own landing. We were directed, by natives waiting on the rocks for our arrival, to a spot where there was a narrow but flat ledge, to which our crew pulled straight ahead. When within a few yards of the shore, a number of men sprang into

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797 the water, each of whom seized the gunwale of the
504 boat, guiding it stem on toward the bluff rock
before us. The sailors meanwhile "feathered"
their oars, and were prepared to "back water," in
case the swell should carry the boat forward with
too great velocity, in which event it would either
have been instantly smashed upon the rocks, or
overset by the rebound of the sea. Thus, poised
upon the top of the swell, we each watched when
the boat rose level with the ledge of rock, and at a
favourable moment sprang upon the shore. The
operation involved the certainty of a ducking, if
not something worse, in the event of a false or
short jump, and of broken shins or knees, in case of
landing too heavily. With the exception of some
of our goods getting wet, no misfortune attended
our landing. We found that preparations had been
made for carrying us to the chief town, about four
miles distant, and knowing how much labour of
another kind was before us, we reluctantly consented
to the proposal, only descending from the rude
palanquin or hammock to walk, where the road was
excessively steep, or was too narrow to admit of
safe progress, excepting in single file. Certain
parts of the road we took skirted the top of tre-
mendous precipices descending to the lake lying in
the centre of the island. At these points it re-
quired some nerve to look without giddiness on the
grand scene below us, and to pass on in safety.
We need not, however, dwell upon the natural
features of the island, these having been already
described in former pages.*

A round of ministerial duties, such as we had
already discharged at Niua Tobutabu, gave us full

* See pages 52-58.

797 was greatly surprised to see the alteration made in this place, by the untiring efforts of its small but increasing population. There are now thirty-five church members, out of about seventy residents, all of whom have forsaken Houma, and heathenism, during the last fifteen months. I arranged to-day for the order and work of their new school. Many of these people are beginning already to read the New Testament. I have no doubt that more of the Houma people will follow their example. There are many persons there whose attachment to Christianity is only kept secret from a fear of the chiefs; and, when these find that they can with safety leave Houma for Fatai, where houses and land will be provided for them, under the king's authority, they are not very likely to remain much longer where they are.

Tuesday, 13th.—Visited Matahau and Fahefa, to examine and arrange the schools. At both these places, I heard a good deal about the agitation among the heathen of Houma. I baptized two old men, who recently came from thence, and who have given evidence of a sincere conversion from heathenism. They tell us that there are many desirous of becoming Christians, but that the chiefs restrain them, by saying, "No, let us wait, and see what Bea does. If they (the Beans) fight, let us fight too."

Saturday, 17th.—A vessel hove in sight, bearing up for Nukualofa, which I at first hoped might be the Mission brig; but, in this we were disappointed. We hope the latter will not be long delayed, seeing we are now miserably short of all kinds of supplies for household use. About seven o'clock this evening, we experienced one of the severest earthquakes

WAR RUMOURS.

309

I have known in these islands. Every timber and post of our house cracked and shook dreadfully; while the roof and walls seemed likely to fall upon us. Such would certainly have been the result, with any other kind of structure than these flexible native buildings of ours.

Monday, 19th.—Rode to Nukualofa. I left Hihifo at three A.M., and reached Mr. Webb's house shortly after sunrise, while the family were at breakfast. In the course of the day we met M. Caligno, the Romish priest at Bea. He told us, in the presence of a good many people, that the town of Bea was certainly preparing for war. This statement led to a long discussion, or rather, conversation, on this and other matters of grave importance; from which it was quite plain that M. Caligno vindicates the course taken by the Bea chiefs. The whole conversation was in the Tonguese language, and was held in the presence of a number of influential natives.

February 20th.—Rumours of disturbances, and of probable war, being on the increase, I had, for some time, determined to seize the first favourable opportunity for visiting the refractory chiefs of Houma and Bea, and of ascertaining the real position of affairs. I mentioned my intention to the king at Nukualofa, and to Ata, our chief here, who both gave me their approval. Certainly no means have been left untried by the king and his Christian chiefs, as well as by all the Missionaries, to calm the existing excitement, and to bear with the heathen and Papists, in their unreasonable and foolish rage.

This day, therefore, I went on my peaceful errand, accompanied by Tevita Hafoka, and Tevita Manu-

PEACE AND PROGRESS.

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[Eua]

Of the two former, nothing need be said here, as they were small and unimportant; but a passing notice of Eua may complete our view of the Tonga group. 797

Several visits to this island, at different periods, enabled us to form a good opinion of its physical character and capabilities. Having been styled the "granary of Tonga," we expected to see it in a very high state of cultivation, but we found nothing peculiar in it in this respect. At present it has but a very small number of people upon it; and these, being cut off from foreign intercourse through the want of a harbour, have no inducement to cultivate the soil beyond the necessities arising for their own support. The beauties of the island are great, and its richness of soil for agricultural purposes unquestionable, but these lie undeveloped. In former days, when the population of the country was greater, large supplies of produce may have been carried to the adjoining main island of Tongatabu, especially in seasons of famine caused by drought or harricanes. From the effects of the one the snug and lovely valleys and ravines of Eua would be sheltered; while its flowing rivulets and streams would counteract the evil consequences of the other, at times when Tongatabu itself might be lying in temporary desolation. Hence the dependence of the Tongans upon Eua, at such times, for food; and hence, probably, the reason why it was styled, magniloquently, their "granary." 241

One of the pleasantest Missionary trips I ever had was to this island, in company with the Rev. George Daniel, in the year 1851. We each took our own boat and boat's crew. The wind being 174
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797 favourable, we soon ran past the eastern point of Tongatabu, and crossed the twelve miles of deep and troubled ocean rolling between the two islands. We were welcomed on shore with every mark of respect and kindness, and we were most favourably impressed with the religious tone of the people, at that time under the able and judicious care of our assistant native Missionary, Bitu Vi. Before our various preaching services and school examinations were ended, a storm came on, which rendered it impossible for us to leave when we intended. We therefore occupied part of our time in a journey of exploration through the island.

133 Next to Tongatabu itself, Eua is the largest island of the Tonga group. It is about ten miles in length, and three in width. The coast is high and rocky, with a fringing reef close in shore. The interior is extremely variegated by hill and dale, (137) beautifully covered by extensive patches of tropical forests, between which stretch open prairie grounds that would be well adapted for grazing purposes, were there any cattle on the island. During our rambles we struck upon the course of a small stream, meandering through, and under, the most lovely vegetation and overhanging shrubbery, leaping here and there over moss-covered rocks in diminutive cascades. Not having seen a flowing rivulet, or heard the murmur of a brook, for years, we were, perhaps, somewhat too enthusiastic in our praises of this one, over which we could almost leap, even at its broadest part; but, for all that, the scenery was exquisite and enchanting.

797 The wind having somewhat subsided, we prepared our boats at day-break for a return to Tonga. Some of the more weather-wise tried to dissuade us,

797 would be better to leave in the morning for Tofua, and do the work at Tugua on our return from thence. Tofua is the most distant island of the group, lying about fifty miles due west from Lifuka.

19th.—Before the sun had risen, we were skirting along the coral reefs of Tugua. The breeze, however, was light, and we did not reach Tofua until one P.M. The island is about two thousand [133] feet high, and the whole coast rocky and precipitous. On that side where we landed, there are but [504] two small patches of sandy beach, with narrow openings through the fringing shore reef. These are the only spots where, even in the finest weather, a landing can be effected. The one is called Haamatua, the other Manaka. We steered for the latter. It is usual, when the natives of the island see any canoe or boat approaching, to send a number of men to assist in getting the visitors, and their canoe or boat, safely on shore. Our approach, however, having been undiscovered, we were left to shift for ourselves. Peter Vi being the only one conversant with the narrow and crooked channel, acted as pilot, while I steered. After entering the passage, our boat was well nigh lost. One of the long rollers threw it broadside upon a sunken patch of reef, in the middle of the channel, of which we were not aware; and, had not the crew jumped into the surf, thus easing the boat of their weight, and also bearing it up, as each succeeding wave came, until it floated again in deep water, we should certainly have been both swamped and smashed. By the time we had got over our difficulties, several of the islanders came, offering many apologies for their late appearance. I was puzzled

A STORM.

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to know where the boat could be secured. The enormous cliffs rose abruptly from the shore, leaving only a strip of black sand, beyond high-water mark, not many inches wider than the boat itself. On my expressing a fear that even a little extra sea would probably float her away into the roaring surf, not fifty yards distant, they only laughed, and said, "It is possible; should there be a hurricane." Their unconcern somewhat reassured me; so placing one side of the boat against the cliff, and propping up the other with a few sticks, we set off for the village.

After dinner, and a little rest, I preached at sunset, and arranged for the examination of the schools, and for religious conversation with the church members, on the next day.

20th.—Breakfasted at daybreak, and afterwards met the classes. There seems to have been much ill-feeling and party-spirit here; but I hope things will now assume a happier aspect. The wind has been freshening ever since we landed, and now it blows hard; the sea is breaking right across the reef channel, so that, as a matter of necessity, I must remain here for the Sabbath. Met and examined the schools in the afternoon: when, considering the remoteness of the island from all the others in Haabai, and particularly from the Mission Station at Lifuka, I found the school in a very fair state of efficiency. The reading and writing performances of both young and old were very creditable.

Sunday, 21st.—Prayer-meeting at sunrise. Preached twice during the day. Another prayer-meeting in the evening. The whole of these services were well attended and greatly blessed. The

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was startled to see that he had wings. This last touch is probably 787
 due to the influence of the Bible. Like a wise soothsayer this visitant, 776
 though so precise with regard to months, allowed himself latitude in
 years. In September, 1912, there was a volcanic outburst in Niua [33]
 Foou, though not very serious and unattended by loss of life. This
 doubtless is a suitable event to carry the responsibility of the doleful
 vaticination regarding the month of September.

DIVINATION

The fact that supernatural forces and beings manifest themselves 787
 through material agencies would invest with importance the office of 791
 those who were skilled in reading the signs. One Tongan stated that
 those who had no god to apply to had recourse to a diviner (*tongafiji*),
 adding the interesting detail that there was aruspication by examina-
 tion of the blood of animals. Another said that he thought that each [793]
 god had his own diviner, but the most trustworthy statements show
 no evidence of a class of diviners attached to the gods apart from the
 priests. A certain cowrie shell god used to give indications of his 787
 will by movements, as by standing up on end. War clubs, presum-
 ably those kept in the temples, were consulted on the expediency of
 going to war. If the club shook that was the god giving his vote for
 war, but if it remained still that was a declaration against the opening
 of hostilities. Whilst, however, the interpretation of the will of the 787
 gods was the function of the priests, there were diviners (*tongafiji*) 791
 who, without being priests or being attached in any special way to a [793]
 particular god, were able to see what was distant in time and space.
 The word *kikite* which is used of divination and foretelling seems to
 contain the same root as the word *kite* which is used of the appear-
 ance of anything at a distance, particularly of land showing up when
 one is out at sea. I have not been able to discover that these diviners
 were reputed to be inspired by any god, but they seem merely to have
 seen and declared things by some inward light of their own. A
 rather circumstantial account is preserved of a famous soothsayer
 named Hema who knew from the island of Eua the progress of a sin-
 gle-sticks match in Tongatabu in which a local champion was opposed
 by a mighty fighter from Eua. Hema kept the Eua people posted

- 133 The land is low-lying and absolutely flat as most of the island of
 132 Tongatapu is. Without hills to trap the rain clouds the rainfall is not
 134 copious, so that the land, which is highly fertile, is fairly easily worked.
 The flatness of the country is fully reflected in maps of *api* which appear
 as neat little squares formed almost by drawing straight lines from one
 side of the island to the other.

4—ACQUIRING AN *API*

- 423 How does a man set about acquiring an *api*? The commonest way
 425 is through inheritance, the rules for which have already been referred
 428 to.²⁰ But for those who cannot inherit, the usual thing done is to wait
 622 for an *api* to become vacant. A man then approaches the chief, either
 644 directly or through someone related to him, or the Town Officer, to
 obtain approval for occupying the vacant *api*. Once this is granted,
 approval by the Lands Department is pretty well assured, and all that
 remains is to complete the formalities.

For those who come from a different area the business of acquiring land is much more difficult. They may have to 'sit around' in the village for a considerable time before an *api* finally becomes available for them. They could try, of course, by applying directly to the Lands Department; but this is in any case subject to there being enough land to go round in the locality concerned. In every case, considerable influence is exercised at the local level, and the role of hereditary holder of the *tofa* cannot be over-emphasised.

This is the general framework within which a man operates in the business of acquiring land. At this point I would like to quote the cases of three men who were interviewed on this subject:

A

I come from Niuafo'ou, and am using X's *api* to support both his family and mine. He has another *api* in M but does not use it. He is old and retired now. I am not related to him, but when I first arrived here I went and asked him if I could use his land as he was of the chiefly family and might have been able to help me get land (the chief was not here at the time). He agreed and I have been using his *api* since . . . I did ask the chief for an *api*, but there is none available. I said I would try at E, but the chief said he would let me have one as soon as it becomes available.

B

- I am now living here with my wife and my grandson. I have only one daughter who is married in this village. I have no *api* of my own, but I share the use of her husband's *api* with him, and also use some of V's land. I have my own *api* in Vava'u where I have sons who are using it at present. I have not sold any cash crops from V's land because I just started using it in June. I have planted some bananas there, but
 433 the first crop is not yet ready. I do sell bananas from my daughter's husband's land, and the largest number of cases I have packed is about 5. I have no *api* because none is available for me. I am undecided whether to stay here permanently; of course I would like to

²⁰ See p. 100.

BLOOD GROUPS IN TONGANS, (POLYNESIA)¹

By J. M. STAVELEY and R. DOUGLAS

- 125 RESULTS OF TESTING 200 Tongans for various blood groups and abnormal haemoglobins are the subject of this report. A blood group study of this population has been reported by Kooptzoff and Walsh.² These workers tested 102 subjects for the A, A₂BO, MNS and Rh systems. We have extended the blood group systems tested to include P, Lewis, Kell, Duffy, Kidd, Diego, Wright, Vel, Sutter and the serum Gm groups. Saliva was also examined for secretion of ABH and Le^a substances, and a search was made for abnormal haemoglobins.

GEOGRAPHICAL FEATURES³

- 101 The kingdom of Tonga consists of about 200 islands in three major groups, Tongatapu in the south, Vava'u in the north, and the Ha'apai group lying between these. The islands of Vava'u are generally high and mountainous, those of Ha'apai and Tongatapu low-lying and of coral formation. The kingdom lies between 15° and 23° south and 173° and 177° west, and is free from malaria.
- 133 [34] Nuku'alofa, the capital, is on the main island of the southern group, Tongatapu, and lies 1,100 miles north-east of Auckland. The population of the kingdom in 1959⁴ is given as 58,351, of which 56,669 are Tongans, and 1,682 part Tongans, Europeans and others.
- 161 162 According to tradition, the inhabitants of Tonga came from Samoa somewhere about 950 A.D.
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COLLECTION OF SPECIMENS

- 125 With the approval of the Government of Tonga, Dr. Sione Tapa, Chief Medical Officer, generously undertook the selection of the subjects and the collection of the specimens. In this work, Dr. Sateki Tupou, Assistant Medical Officer, played a big part. From each selected person, a clotted blood specimen and blood in Alsever's solution with added antibiotics was obtained by venepuncture. The saliva specimen was obtained after the mouth had been rinsed with water, and was heated in a boiling water bath for ten minutes.
- 126 [10] The samples from the 200 people concerned in the study were collected in batches of 50; one batch in May 1959, two during July 1959, and one in September 1959. This allowed the collection to take place just prior to the departure of a ship for New Zealand. It also allowed the testing of each batch to be completed during the week after arrival

[122] ¹ This work was carried out under a grant from the Auckland Medical Research Foundation.

² Kooptzoff & Walsh, 1957.

³ Pacific Islands Year Book, 1956:109.

⁴ Pacific Islands Year Book, 1959:111.



In the shadow of time stands the coralline limestone island of 'Eua, the oldest of the Tonga Islands and truly a geologist's paradise, as seen here from the southeast coast of Tongatapu.
Ko e ta ena e motu ko 'Eua na'e fai mei he matatahi 'i he feitu'u tongahahake 'o Tongatapu. Ko 'Eua foki 'oku motu'a taha he 'otu motu Tonga, pea 'oku lahi ai e ngaahi maka mo e kekeke kehekehe'a ia 'oku fie ako ki ai ha kau poto fakasaienisi lahi.

[P.1-A]

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39: Gerstle & Raitt C,Q-4,5 (1952-1972)
1974 OU9 Tonga OU9

In absolute silence and darkness at the bottom of 133 the Pacific Ocean about 40 million years ago, the formation of the Tonga Islands began. Racked by intense heat and seismic activity, the depths were torn asunder to reveal the wonder of emerging life. Mounds, formed by the tremendous volcanic turbulence, were later uplifted to become what we know today as 'Eua, several of the Ha'apai islands, and some of the Nomuka group. Then, over an immeasurably vast period of time, the growth of

[p. 1-B]

39: Gerstle & Raitt C,Q-4,5 (1952-1972)
1974 OU9 Tonga OU9

coral limestone atolls on volcanic mounds which slowly became submerged, created Tongatapu, the islands of Vava'u, nearly all of the Ha'apai group, and Nomuka island. More recent milleniums have witnessed volcanic peaks, in most forceful agitation, rising above the surface to form the islands of 'Ata, Kao, Tofua, Fonuafo'ou (Falcon Island), Late, Fonualei, Niuafo'ou, Niuatoputapu, and others. 133

Centuries upon centuries later, and yet long before science had uncovered the mysteries of island 173

[p. 1-C]

TEXT CONTINUED ON PAGE 31

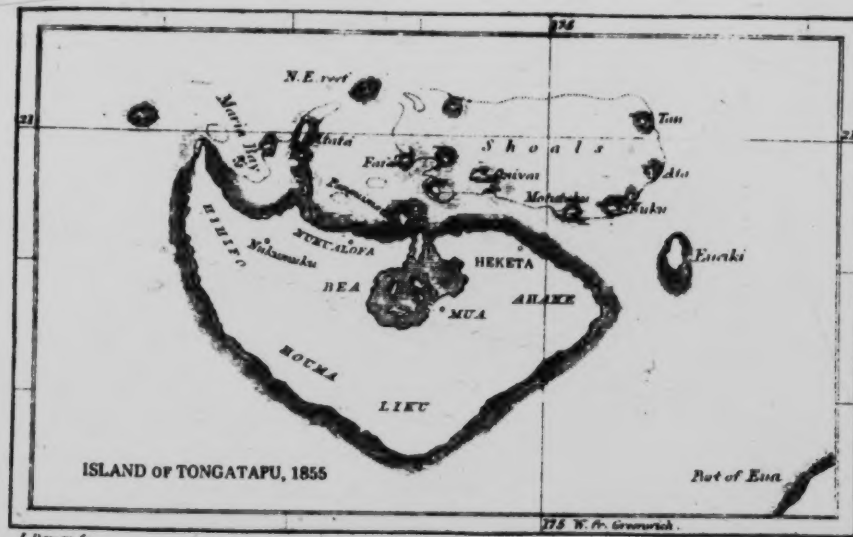
173 origins, Polynesians came to populate the islands, and they created their own explanation of how their islands had come to be. According to Tongan legend, the great god Maui went fishing one day and pulled up the various Tonga Islands with a fishhook which he had obtained from a Samoan named Tonga Fusifonua.

173 No matter to which theory one gives credence, for each has its beauty, the 150 Tonga Islands today adorn the surface of the vast Pacific as sparkling specks of greenness scattered among shades of magnificent blue ocean.

174 But where did the Tongans come from? There has been much speculation about Polynesian migrations. Some historians and anthropologists say that the Polynesians migrated from New Zealand or America, others say that they came directly from Melanesia, and still others contend that they are from a "fatherland" in the Pacific which no longer exists. The most popular theory, however, is that the first Polynesians migrated from southeastern Asia or the area of Indonesia around the 4th or 5th century B.C., landed at certain centers of settlement (such as Samoa, Tahiti, Tonga), and dispersed periodically from there.

Imagine what courageous people the early Polynesians must have been to have embarked upon the seas in their long colonizing journeys and traveled without navigating instruments to distant islands thousands of miles away. With tremendous faith in the gods, they essentially pitted their vessels against the unpredictable elements of nature. By means of a highly sophisticated knowledge of astronomy, they navigated during the day by the sun, wind and swell of the ocean, and at night by the stars—many of which they named and could locate in the sky at any different time of the year; otherwise, when the heavenly bodies were obscured, the mariners directed their courses according to the wind and ocean currents. Indeed, they rightly merit the reputation which they have gained as being outstanding, intrepid voyagers and navigators.

174 Their main sea-going vessels for the lengthy ocean
501 voyages were double canoes of considerable size and

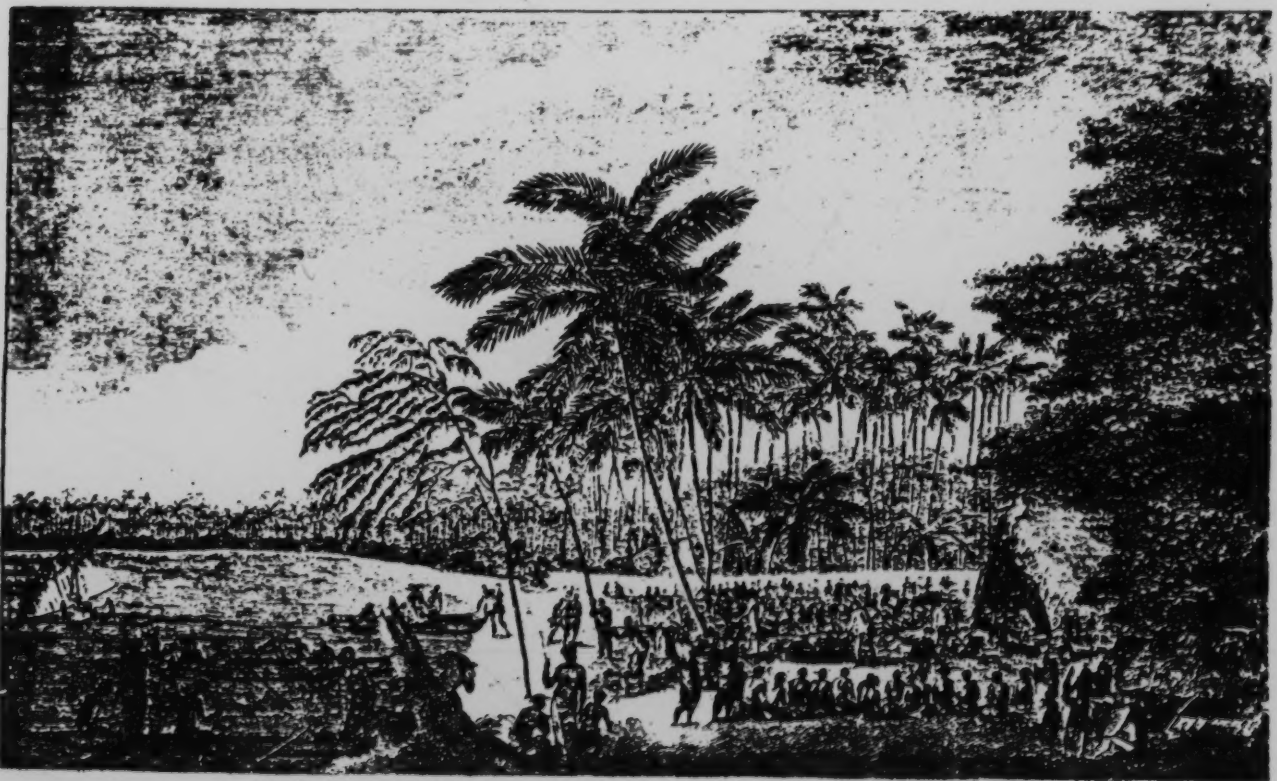


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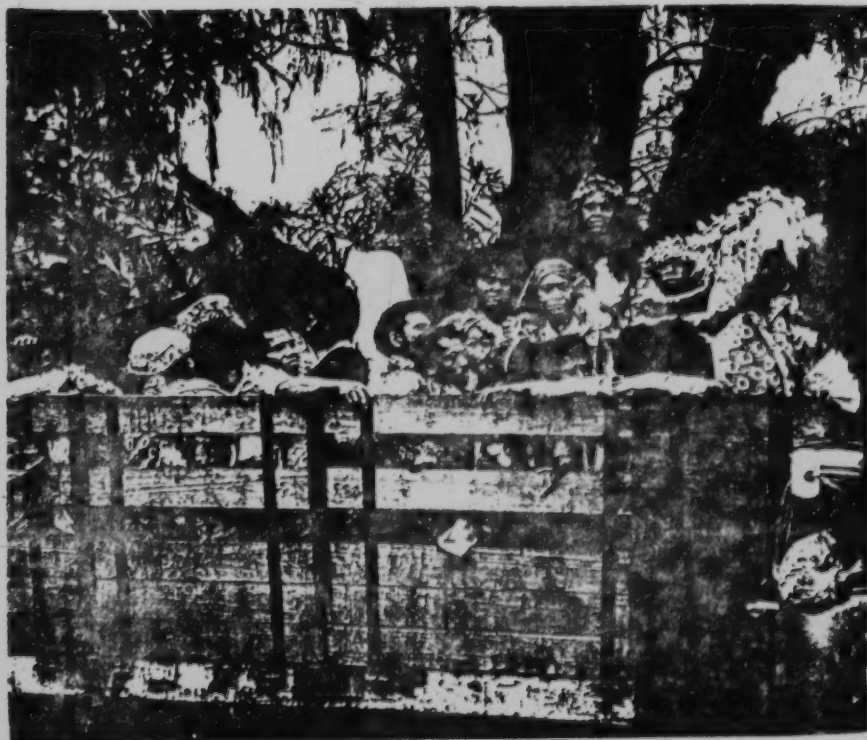
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39: Gerstle & Raitt C,Q-4,5 (1952-1972)
1974 0U9 Tonga 0U9

193
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[P.39-A]



Bedecked with colorful flowers and people, this truck leaves Nuku'alofa for a day of feasting, swimming, dancing and singing at the beach.

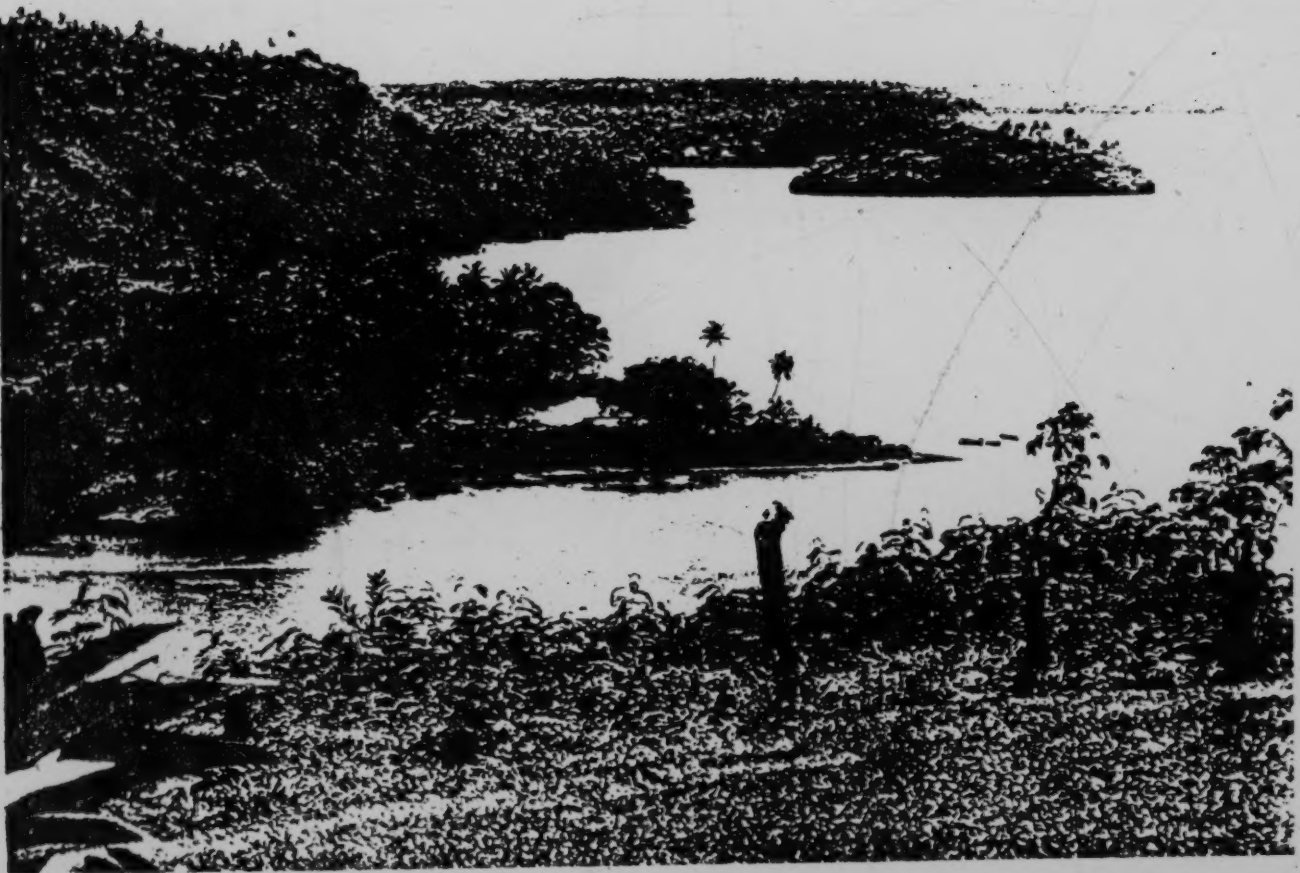
Ko e uta eni ki matatahi 'o ha kau kai tunu mai Nuku'alofa

Nature's genius shaped the maze of inlets which thread around velvet-covered islands in Vava'u, embracing one of the most beautiful harbors in the Pacific (photo on opposite page).
'Oku kau e taulanga 'o Neiafu, Vava'u, 'i he faka'oto'oto taha 'i he Pasifiki (to 'i to'omata'u).

52 [photo is on p. 53-A]

199

39: Gerstle & Raitt C,Q-4,5 (1952-1972)
1974 009 Tonga 009



[P53-A]

[Caption is on P.52]

39. Gerstle & Raitt C.Q.-4,5 (1952-1972) 1974 OUP Tonga OUP



[p. 93 is blank]

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764
766

- | | |
|-------------------------------------|----------------------------------|
| 10. A small child. | 13. Tomb in memory of the chief |
| 11. Tongamano, grandfather of the | Telea, who was lost at sea. |
| chief Havea, also the chief Tu'i. | 14. Finau, a chief who met Cook. |
| 12. Grandmother of the chief Havea. | 15. The chief Tafao. |

Oku pehe ko e ngaahi telio'anga eni, o fakatatau ki he ngaahi fakamatata na'e ma'u 'e he kau folau 'a Dumont d'Urville:

- | | |
|-----------------------------------|--|
| 1. Tu'i Tonga ko Fatafehi. | 9. Kau tu'i 'e toko fa. |
| 2. Kau tu'i 'e toko nima | 10. Tamasi'i pe ta'ahine. |
| 3. Tu'i mo e kuini. | 11. Tongamano, 'a e Kui 'a e 'eiki ko |
| 4. Tamasi'i pe ta'ahine. | ia ko Havea. |
| 5. Tu'i. | 12. Kui fefine 'a Havea. |
| 6. Kau tu'i 'e toko fa. | 13. Mala'e fakamanatu 'o e 'eiki ko |
| 7. Tu'i. | Telea 'a ia na'e mole 'i tahi. |
| 8. Kau tu'i 'e toko fa, kau ai 'a | 14. Finau, 'a e 'eiki na'e fakale'iloaki |
| Tu'i pulotu mo Fatafehi. | kia Kapiteni Kuki |
| | 15. 'Eiki ko Tafao. |

- 113 31 Bottom: "Tronc d'Arbre, de 100 pieds de circonference, pres de Moua." Artist: de Sainson. Plate 75 in Dumont d'Urville, *Atlas-Partie Historique: Voyage de la Corvette "L'Astrolabe"*
- 32 [Langi] Betw pp. 46 & 47 in Sarah S. Farmer: *Tonga and the Friendly Islands*
- 34 Top: "Tombeau de Pangai a Hifo." Artist: de Sainson. Plate 86 in Dumont d'Urville, *Atlas-Partie Historique: Voyage de la Corvette "L'Astrolabe"*
- 34 Bottom: "Tombeau d'un Chef." Artist: de Sainson. Plate 95 in Dumont d'Urville, *Atlas-Partie Historique: Voyage de la Corvette "L'Astrolabe"* . . .
- 35 "Portrait of Otago, or Attago, a Chief at Amsterdam." Artist: Wm. Hodges. Plate 49, facing p. 141 in George Wm. Anderson, *A New, Authentic, & Complete Collection* . . .
- 36 "George Tubou, King of the Friendly Islands." Frontispiece in Rev. Thomas West, *Ten Years* . . .
- 38 "The Reception of Capt. Cook, in Hapae." Artist: J. Webber. Plate 46, facing p. 450 in George Wm. Anderson, *A New, Authentic, & Complete Collection* . . .
- 193 39 A View at Anamooka." Artist: J. Webber. Plate 29, facing p. 447 in George Wm. Anderson, *A New, Authentic, & Complete Collection*
- 50 40 Consolation a l'Esprit pour un enfant malade." Artist: de Sainson. Plate 77 in Dumont d'Urville, *Atlas-Partie Historique: Voyage de la Corvette "L'Astrolabe"* . . .

POPULATION CHANGES IN TONGA:

AN HISTORICAL OVERVIEW AND MODERN COMMENTARY

A. C. WALSH



IN common with other Pacific peoples, many Tongans are now finding that the attractions of the main island and capital town far outweigh the often declining attractions of the islands of their birth. Population pressure, limited or unevenly developed resources, and new demands for money have induced many Tongans to resettle where the prospects seem more tolerable. As a consequence, the demographic importance of the different islands and settlements relative to one another is changing. This much is widely known, but it is sometimes seen as a phenomenon peculiar to recent years, although evidence is available to indicate that population movement is no new thing in the Pacific. 161

Tongans have long been amongst the most mobile of the peoples of the central Pacific. At varying times in the prehistory of the area, the Tongan *tu'i tonga*¹ claimed suzerainty over and tribute from Futuna and Wallis, the Lau group, Rotuma, and parts of the main islands of Samoa and Fiji. In the contact period over 3,000 Tongans were engaged in the Fijian wars from which Cakobau emerged victorious, while later others were engaged in missionary endeavours as far away as the Solomons. This early mobility, both beyond but more especially within the group, was no doubt encouraged by Tonga's physical geography.² Its high, long western chain of volcanic 173 648 175 648 505 133

¹ The oldest and most important of three lines of kings, a sacred kingship dating from at least the tenth century.

505 islands, from 'Ata in the south to Niuafo'ou some 500 miles to the
 133 north, served as navigation "beacons" which lit up and signposted the
 vast ocean highway, making deliberate contact between parts of the
 175 group a not uncommon happening from very early times. This, in turn,
 131 encouraged cultural homogeneity and the emergence of a central
 642 political authority in the eastern more densely settled, low coral islands
 running parallel to the volcanic chain. A high degree of social strati-
 565 fication and strong dynastic rule uniting the islands can be traced
 642 back to the tenth century, and this continued without interruption for
 642 several centuries. Although the main groups of islands, Vava'u, Ha'apai
 and Tongatapu, had in practice become separate political entities by the
 time of European discovery, this is unlikely to have diminished the
 669 contact among them. In the disturbances which followed discovery the
 165 whole group was plunged into sporadic civil war (1799-1826) in which
 it is estimated that a quarter of the population died, and peace and unity
 175 were not really restored until 1852. Warfare, introduced diseases, and
 161 new political and missionary activities had effects on population num-
 bers, distribution and settlement patterns no whit less dramatic than the
 pressure of the present day. The pace, direction and character of
 population movement may have changed, but movement and change
 are in themselves not new phenomena in Tonga.

DISPERSED AND NUCLEATED SETTLEMENTS

361 Today's typical settlement consists of an assortment of houses set on
 two-fifths of an acre allotments ('api kolo) sited close to the sea on the
 sheltered side, and some distance inland on the weather side, of an
 island. The settlement is nucleated, its boundaries marked by a grave-
 yard, sometimes by an *a kolo* or village fence, and always by a clear
 transition in land use: the residential village gives way to cultivated
 'api tukuhau or tax allotments, usually of 8½ acres to which all male
 taxpayers over 16 years are theoretically entitled. Apart from the
 towns of Neiafu in Vava'u, Pangai-Hihifo in Ha'apai and Nuku'alofa
 and nearby industrial Havelu Loto in Tongatapu, there are few differ-
 ences, except in size, in form or function among villages anywhere in
 the group. Some, with population growth, have expanded and joined
 to form one continuous settlement, but even then the component parts
 have retained their separate identity and, with this, the characteristics
 of the small village.

175 This pattern is of relatively recent origin, for the first European
 361 explorers to visit Tonga recorded no villages as such. Tasman, who
 first discovered the islands in 1643, observed that "every man lived in
 his own gardens, the allotments being separated by reed fences."³ Cook,

³ Cited by Kennedy (1958): 162.

SHIFTING CULTIVATION AND POPULATION GROWTH IN TONGA

by

ALARIC MAUDE

The relationship between population growth and agricultural systems has been a central question in some of the recent geographical work in the Pacific Islands (e.g. Brookfield, 1962; Clarke, 1966; Lea, 1965). This paper seeks to contribute to this body of research through a study of the effect of population growth on the agricultural system of Tonga, an island group which in common with a number of other South Pacific territories has experienced rapid rates of population increase in recent decades. The study also attempts to assess the extent to which the arguments of Ester Boserup on the relationship between agriculture and population growth can be usefully applied to the process of agricultural change in Tonga. Boserup's thesis (Boserup, 1965) essentially is that the intensification of traditional agricultural systems from long fallow to short fallow to multi-cropping occurs only when forced by population pressure, because such intensification involves an increase in labour input and a decrease in output per man-hour. She therefore regards the agricultural system as the dependent variable in the relationship between population and agriculture, and explains differences in cultivation systems as the result of differences in population densities. [161]

THE AGRICULTURAL ENVIRONMENT

The chain of some 150 islands in Western Polynesia which forms the Kingdom of Tonga has a total land area of 256 square miles and supports a population of about 81,000 (1968). The economy is overwhelmingly agricultural, and is based largely on subsistence food cropping and the export of bananas, copra and desiccated coconut. Over 90 per cent of Tongans live in the three main groups of Tongatapu, Ha'apai and Vava'u (Fig. 1), where almost all the islands are of raised limestone formation. The climatic variable of greatest agricultural significance is rainfall, which increases from a mean of 67 inches at Nuku'alofa (Tongatapu) to

[p. 57-A]

133 Tonga being a country made up of islands (150 at
182 present), the sea has always been a factor around which
181 life revolved. Tongans are reputedly among the most
adventuresome, adept seafarers. According to popular
174 belief, Tonga and Samoa may well have been the center
of dispersal for other island groups. That is, the first
Polynesians who migrated, say, from southeastern Asia
and Indonesia, made the area of Tonga and Samoa the
cradle of Polynesian civilization.

181 Thus, the innumerable references to the sea which
823 are made in this book, are reflective of the feeling of
respect for and communion with the sea which the
Tongans have always felt, as well as of the spirit of
adventure and seafaring which have long been a vital
part of the Tongan way of life.

Donna Gerstle

[p. 10-B]

[p. 11 is blank]

¹⁶²
¹⁶¹ The inhabited islands comprise 238.81 square miles--almost
¹³¹ 90% of the total land area. Thus, most of the islands of
¹³³ Tonga are little more than elevated reefs. The total land
area of the country is under 270 square miles, and all but
seven of the islands are less than five square miles in area.

Geolorically, Tonga is made up of two approximately
parallel lines of islands, running north-east to south-west.
Those on the western ridge, some ten in number, are of
volcanic origin. Nearly all of these islands have steep
rocky surfaces and high sea-cliffs, making landing difficult
and yielding little land that is suitable for habitation or
cultivation. From five to fifteen miles east of the volcanic
ridge runs a line of coralline islands. These consist for
the most part of atolls set among reefs, but the two largest
islands, Tongatapu and Vava'u--which together comprise half
the total land area of Tonga--are sloping limestone plat-
forms. 'Eua and Niuatoputapu islands are another variation
on the two main types, in that they are volcanic in origin
with a limestone cover. They are the only Tongan islands
³¹² with natural running water. For the most part, the water
supply on the other islands is provided by rainfall. During
dry spells, recourse is made to the harsh but potable water
available from wells dug through the limestone.

¹³¹ The coralline islands of Tonga form three clusters
(see Map 2). The Tongatapu Group in the south consists of

[TEXT CONTINUED ON PAGE 37]

161 increased by 36.2%, the increase was not uniform throughout
162 the islands. On the contrary, there was an absolute
decrease in population on nine islands, and only two islands
of more than one square mile in area had an increase in
population of more than 20% over the figure for 1956. These
are the islands of Tongatapu and 'Eua.

131 'Eua is a large island a few miles to the south-east
133 of Tongatapu. Because of intervening reefs, it can be
162 [505] reached only by a roundabout passage after a very rough
[513] sea-voyage of about five hours. The island rises in a
series of rocky terraces to about 1,000 feet above sea level,
with steep valleys that are the major source of timber in
Tonga, leaving relatively little land suitable for cultivation.
For these reasons, the island is not very attractive
161 for settlement. At the time of the census of 1939, the
162 population of 'Eua was only 480. After a volcanic eruption
164 [731] on the northernmost island of Niuafo'ou in 1946, many of
the people of that island were settled on 'Eua; at the
census of 1956, more than 40% of the population of 'Eua over
the age of nine had been born on Niuafo'ou. Besides this
Niuafo'ou influx, the increase in the population of 'Eua
is accounted for largely by migration from other islands,
161 especially by men seeking land. Even so, with an intercensal
162 population increase of 76.2%, the density of population on
'Eua in 1966 was only 100 per square mile, almost the lowest
[133] of any island in Tonga. Moreover, while there is still some

161 land available on 'Eua for settlement and cultivation, there
162 is no possibility that the island could support the kind of
133 density found on most of the other islands, owing to the
nature of the terrain.

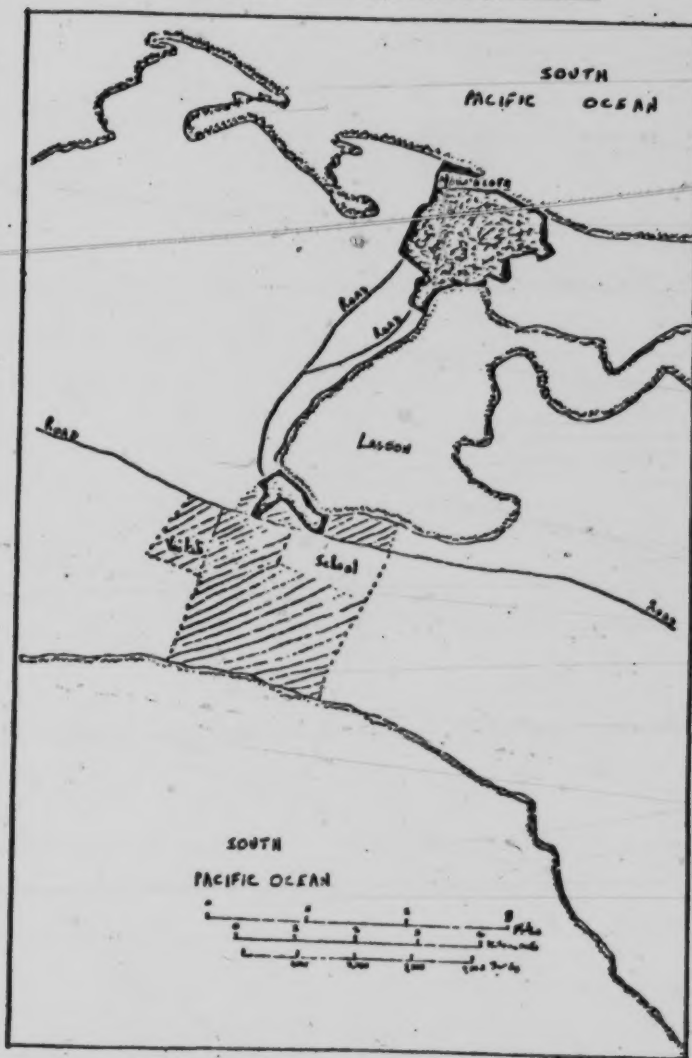
161 As Table 2 indicates, the burden of intercensal
162 population increase and inter-island migration has fallen
166 mainly on the island of Tongatapu. Tongatapu has 40% of
137 the land area of Tonga and 60% of the population. The
population of the island increased by more than 50% in the
161 ten years between 1956 and 1966. Much of this increase has
162 been concentrated in the urban area of Nuku'alofa, the
368 capital of Tonga. Thus, while the intercensal population
increase for Tonga as a whole was 36%, and the increase for
the rural areas of Tongatapu was 42%, the increase for the
Nuku'alofa urban area was 79%. This includes the one-time
village of Haveluloto, now virtually a suburb of Nuku'alofa,
which in 1956 had a population of 292 and in 1966 had a
population of 1,334.

161 In summary, there have been two kinds of population
162 flow in Tonga associated with the increase in population.
166 One kind of migration has involved settlement on islands
that have land available for cultivation (primarily the
island of 'Eua, but also some resettlement on Niuafu'ou
beginning in 1958). The second flow has been towards the
island of Tongatapu. On the remaining islands, the total
number of people has remained relatively constant, but

46: Decktor Korn E-5 (1969-1970) 1978 OU9 Tonga OU9
 Tongatapu
 Motulahi

65

MAP 4. Central Section of Tongatapu



102
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 491
 133
 368

Sources: Adaptation of a map of Tongatapu supplied by
 the Tonga Department of Lands and Surveys.

1777]

ARRIVAL AT NOMUKA

[97

off in Canoes from different islands, bringing with them two pigs and a quantity of fruit and roots all of¹ which they exchanged for Hatchets, Nails, beads &c². About 8 or 9 o'clock Mr King returned with seven hogs and a quan[t]ity of Fruit and roots; there came with him the chief of the island named *Tooboulangee*³ and another whose name was *Tapah*,⁴ they brought me a present of a hog with a promise of more the next day. As soon as the boats were aboard I stood for Anamocka, and as the wind was scant, I intended to go between Anamocka etc⁵ and the breakers to the SE of it, but on drawing near we met with very irregular Sound⁶ varying every cast 10 or 12 fathoms, so that I was obliged to give up the design and go to the Southward of all; this carried us to leeward and obliged us to spend [the] night under sail. It was very dark and we had the Wind from every direction, accompanied with heavy Showers of rain, so that at day-light the next morning we found our selves much farther off than we were the evening before and the little wind we had was right in our teeth. We continued to ply all day to very little purpose and in the evening anchored in 39 fms⁷ Water the bottom Coral rocks and broken shells—the west point of Anamocka bearing ENE four miles distant. Tooboulangee and Tapah kept their promise and brought me off some hogs, and I got by exchanges from different people several others and as much fruit as we could dispence with.⁸ It was remarkable that during the whole day, the Indians would hardly part with any one thing to any body but me, Captain Clerke did not get above one or two hogs. Knowing from experience, that if every body was allowed to traffick with the natives according to thier own caprice, perpetual quarrels would essue, to prevent this I ordered that particular person[s] should manage the traffick both on board and ashore, and prohibited the trade to all others. I also ordered that no curiosities should be purchased till the Ships were supplied with Provisions and leave give[n] for that purpose.

Wed. 30

At 4 AM hoisted out a boat and sent the Master to Sound the sw side of Anamocka where there appeared to be a harbour, formed

MAY

Thurs. 1

122

133

¹ two pigs ... all of: Adm 55/111 two Hogs, or Pigs, some Plantains yams, Breadfruit & Cocanuts.

² Tupoulangi.

³ Tepa possibly, but probably Kepa would be the better form: Anderson "Taipa or Kaipa", Burney Kaper, Edgar Kapee. It looks as if he was a *matapala*—not a chief, but what we might call an administrative official, of some importance.

[565]

⁴ Nomuka Iki ("little Nomuka"), the little island about a mile south-west of Nomuka.

⁵ "The Natives soon gave us a specimen of their happy genius in the art of pilfering, by stealing a hatchet out of the galley, for which, Rich⁶ Young a quiet and good man was punished with twelve lashes."—Williamson, 30 April. But he was probably inattentive, as well as quiet and good. He was cook's mate. Charlton records the punishment as 6 lashes, for neglect of duty and is probably more reliable.

[1777]

98]

Resolution AND Discovery

[May

- 122 by the island on the NE and small isles and shoals to the sw and SE.
 133 In the meantime the Ships were got under sail and worked up to the
 island; when the Master returned he reported that he had Sounded
 between great and little Anamocka, where he found 10 & 12
 fathoms, the bottom Coral Sand, that the place was very well
 sheltered from all winds but that there was no fresh Water but what
 122 was some distance in land, but little of it and that little not good. For
 this reason only I determined to anchor at the old place on the north
 side of the island, but though we were not above a league from it [it]
 122 was 5 oclock in the after noon before we got to an Anchor. A con-
 siderable Number of Canoes being continually about the Ships, re-
 609 tardated them considerably. There were amongst them some double
 ones with a large sail that sailed round us apparently with the same
 case as if we had been at anchor. I came to an anchor in the very
 122 same place as I did when last here, viz, in 18 fathom Water, the
 bottom Coarse Coral sand; the island extending from E to SW and
 Fri. the West point of the Westernmost Cove SE about $\frac{1}{2}$ of a mile dist.¹
 648 The next morning while preparation were making for Watering, I
 went ashore accompanied by Captain Clerke and some of the officers,
 to fix on a place to set up the observatories and to keep a guard,
 leave being soon obtained of the Natives who accomodated us with a
 648 boat house and shewed us every other Mark of civility. Toobow the
 634 Cheif of the island² took me and Omai to his house, situated in a
 pleasant spot in the midst of his plantation, a fine grass plat lay round
 356 the [door?] which he gave us to understand was to clean their feet
 [352] upon, a mark of cleanness I had no where observed in this sea before,
 but afterwards found it was very common at these islands. The floor
 of the house was laid with Mats and no carpet could be kept cleaner.
 439 While we were a shore we bartered for a few hogs and some fruit, and
 before we got on board the Ships were filled with the natives and as
 122 few came empty we found no want of anything.³ In the after noon I

¹ On this anchorage cf. II, p. 431. 'Westernmost Cove' here seems to bear out the correction suggested in n. 1 on that page.

² Presumably, but not clearly, Tupoulangi already mentioned. 'The Chief of Anamooka whose title is Agee, was named Tubow, a middle aged man, more modest and sedate than we found the generality of these people. Another chief of some consequence was named Kaper; this man was remarkable for making long orations to his countrymen.'—Burney Journal, 2 May. 'Agee', 'viti' (cf. Tahitian *ari'i*, Maori etc. *ariki*). 'Kaper', Cook's 'Tapah', or Kapa.

³ 'Kept all kind of Provisions from the ship's Comp^d except Spirits and Serv'd fresh Pork Breadfruit, Yams Plantains &c in leiu.'—Harvey log, 1 May.—'This day having purchas'd among the Canoes as much fresh Pork, Breadfruit, Yams and Plantains as wou'd serve the People for the present, I stop'd every Species of their Sea Provision except the Grog, and serv'd it to them, so that now we enter upon quite a new Regimen, and a most salutary one it is; tho' Thank God our last agreed with us very well, we have not a Man in the Sick List. This Forenoon I receiv'd an Order respecting the Trade and Provision from Cap^t Cook which I immediately put in force.'—Clerke, 1 May.

1777]

DIFFICULT NAVIGATION

[103

THURSDAY 15th. At day break the next morning steered to the East for the passage between Fodua and Callefango,¹ with a small breeze at s and sse. About 10 o'clock Feenough came on board and remained with us all day, he brought with him two hogs & a quantity of fruit, the last was very exceptable as our stock was nearly expended. At Noon the latitude was 19° 49' 45" s and we had made 7 M. of longitude from Anamocka; Amattafoa, or Otafoa² bore N 88° w, Aghao N 71° w, Fodua N 89° w and Aseva³ s 12° West. After passing Fodua we met with a reef of rocks which, as we had but little Wind, gave us some trouble to keep clear of them, they lay between Fodua and Anneniva,⁴ a small low isle which lies 7 or 8 miles from Fodua in the direction of ENZ. Fodua is a small island of middling height and bounded all round by a steep rock; it lays s 67° E distant 6 leagues from Aghao, and 3 from Ogodoo in the direction N 33° E. Being past the rocks just mentioned we hauled up for Anneneva in hopes of finding anchorage, we were again desappointed and obliged to spend the night making short boards, for although we had land in every direction the Sea was unfathomable.

FRIDAY 16th. At Day break in the morning of the 16th with a gentle breeze at SE steered NZ for Happi which was now in sight. The Wind Scanting upon us we could not fitch, so that we had to ply to windward in doing of this we once passed over some Coral rocks on which had 6 fathom water,⁵ the moment we were over them had no ground with 80 fathom of line; at this time the isles of Happi bore from N 50° E to S 9° W. We got up with the no[r]thermost of these isles by Sunset and there found our selves in the very same situation as we were the two preceding evenings, so that we had another neight to

¹ Fotuha'a, a flat-topped island, with a coast-line of cliffs, about 9 miles NNE of Kotu; and Lofanga, about the same distance east of Fotuha'a. The passage is clear, except close to Lofanga.

² Amattafoa, or Otafoa: Cook, one imagines under the instruction of Anderson, is getting closer to the proper name of the island, [O] Tofua. Cf. *Voyage*, I, p. 237, n., where Douglas remarks on 'the great difficulty of knowing accurately the exact names of the South Sea Islands, as procured from the natives', and compares Cook, Anderson and Taaman.—'Captain Cook's Amattafoa, is, with Mr. Anderson, *Tefoa*. . . Mr. Anderson's great attention to matters of this sort being, as we learn from Captain King, well known to every body on board, and admitted always by Captain Cook himself, his mode of spelling has been adopted on the engraved chart of the Friendly Islands; which has made it necessary to adopt it also, in printing the journal.' This is an enlargement of brief notes by Douglas in the MS, f. 127v; and there are other notes on names, based on Anderson. Bligh AL has a cantankerous and partly illegible comment on Douglas's note: 'C. King knew nothing about the Names of the Islands, & Mr Anderson cleve[er] as] he was could only get them as the ship sailed past, or those he could see at Anchor, . . . of which from one Native's information is obvious, & his names are in gen[eral] very erroneous . . .'

³ Ha'aseva, 4½ miles to the east of Kotu, the principal island of the group.

⁴ Douglas: 'according to Mr Anderson Neeneeva'; Niniva, within a large expanse of reef.

⁵ This must have been the coral Balfour Patch.

1777]

LANDING ON LIFUKA

[105

spend under sail with land and breakers in every direction. Towards the evening Feenough who had been on board all day, went ashore to Happi and took Omai with him, he did not forget our situation and kept up a good fire all night by way of a land mark.

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SATURDAY 17th. At day-light the next morning I sent a boat to look for anchorage, she soon found a place and we came to in 24 fathom the bottom Coral sand, the northern point of Happi or the north end of Ha-an-no bore N 16° E, the Southern point of Happi or Hooleva S 29° W, and the North end of Lefooga S 65° E.¹ Two ledges of rocks lay without us, the one bearing S 50° W and the other WNW distant 2 or 3 miles. We lay before a creek in the reef which made it convenient landing at all times and we were not above $\frac{1}{2}$ of a mile from the shore. By the time we had anchored the Ships were filled with the Natives and surrounded by a multitude of Canoes, filled also with them. They brought with them hogs, Fowls, fruit and roots which they exchanged for Hatchets, Knives, Nails, beads, Cloth &c. Fenough and Omai having come on board soon after it was light in order to interduce me to the people ashore I now accompanied them to the isle² for that purpose; The Chief conducted me to a house situated close to the Sea beach which I had seen brought thither but a few minutes before. In this we were seated that is The Chief, Omai and my self, the other chiefs, and the Multitude seated themselves in a circle without before us. I was then asked how long I intended to stay, on my saying five days, Tapah was order[ed] to come and sit by me and proclaime it to the people. He then Harangu'd them in a set speach mostly dictated by Feenough. The purport of this speach as I

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[131]
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¹ See Edgar's Chart XLVI and Fig. 5. The islands Cook names are Ha'ano, Uoleva, and Lifuka. These are three of the largest of the Ha'apai group. But Uoleva does not provide the 'Southern point' of the group: Uiha is a more southerly, and larger island, close to it. Edgar's chart gets the relative positions of the islands quite well, though his names, apart from 'ar-no' and 'Lafugar' are misplaced.

[103]

² What isle? It is curious that Cook does not more closely define his landing place; but we know from other records that it was at the northern end of Lifuka—cf. *Voyage*, I, p. 242: 'landing at the North part of Lefooga, a little to the right of the ship's station'. This, together with Chart XLVI, where the anchorage is marked, and what is evidently the 'creek in the reef' mentioned by Cook, would argue that the precise place was towards the tip of the island (the point Ahanga), almost at the northern end of the bay called Faka'amumei. Local tradition now records the anchorage correctly enough, but has the landing-place at the point called Muikuku, the south-west end of the bay, just east of which is the village called Koulo. Now Koulo means 'gold'; and why should a Tongan village be thus called? Because, say the old men, when this village was built it was called 'Gold' in memory of Captain Cook's visit; for his boats were full of bags of gold. Cook presented a few medals, left over from the second voyage, at various places on this voyage; and very likely here. Brass or 'platina' may well have come down in tradition as gold. The story was told to me on a trip by cutter to the outlying island Mo'unga'one in July 1938, to explain a sudden surprising question 'What did Captain Cook's ships weigh?' The Tongan knows that gold is heavy; but when he first saw—or last saw, for that matter—a gold coin I do not know.

[103]

1777]

TONGAN RAZORS

[113

SUNDAY 25th. In my walk to day I happened to step into a house where a Woman was dressing the eyes of a young child which was blind; the eyes were much inflamed and seemed to be covered with a thin film. The instruments she used were two slender wooden probes, with which she had probed round the eyes so as to make them bleed; she had almost finished the operation when I went in so that I saw but little of it.¹ In the same house another women was shaving a Childs head with a Sherks tooth stuck into the end of a piece of stick, she first wet the hair before the razor with a rag dipped in water; the operation gave no sort of pain to the Child although the hair was taken off as close as any of our razors would have done it,² I tried one and found it an excellent succedaneum. But the men shave the beard with two shells, one of which they place under a small part of the beard and with the other scrape that part off;³ in this manner they will shave very close, the operation is rather long but no ways painfull and there are men who seem to profess it, and it was as common for to see some of our men sit to be shaved by these shavers, as it was for the Chiefs to come aboard to be shaved by our Barbers.⁴

Finding we got little or nothing where we lay,⁵ I resolved to change our station and wait Feenoughs return in some other place; accordingly in the fore noon of the 26th we got under sail and stood to the Southward along the reef of the island, having 14 and 13 fathom water a sandy bottom. We however met with several detached Shoals, some were discovered by breakers, some by the Water upon them appearing discoloured and others by the lead. At half past two PM having past several of these shoals and seeing more

were said to be at Huahine; and he was to have another one, p. 196 below. '... the man gave such answers & drew the number of the masts upon the sand, as to stagger us & put some confidence in the report, the fellow was very ready to go in our boats to prove the truth of his tale.'—King.

¹ Mariner has an interesting paragraph on Tongan ophthalmia and eye-surgery, II, p. cii: ending, 'Mr Mariner neither saw nor heard of but one man who had lost his sight by disease'.

² 'an absolute falsity [it] will not take it off so [well] as scissors.'—Bligh AL, I, p. 260.

³ 'this is a better [plan] and they cut their beards off pretty close.'—Bligh AL, I, p. 261.

⁴ 'none of our Sailors could bear it & none more than once try'd how they liked the meth[od].'—Bligh AL, I, p. 261. Cf. Ellis, I, p. 93, on Tongan feelings in the matter: 'This operation [with shells] however is rather painful and tedious, and observing how expeditious and clean we performed it, they were desirous of trying it also; and it so far exceeded their expectations that scarce a day passed without plenty of customers.'

⁵ 'But we have purchased almost all their commodities; they having very few things to dispose of except their young Girls which seems to be almost the only trade at present, & indeed is very advantageous to the men, for they are paid a hatchet for every nights lodging, or a Shirt.—This seems the Common run of trade—but in some instances I have seen two hatchets & a shirt or sheet given for a Nights lodging with a fine young Girl.—The men receive what is agree'd for & leave them on Board, & come for them again the next morning, & if the girls get any thing more they take it away the moment they come.'—Bayly T, 28 May.

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[1777]
Resolution AND Discovery

[May

122 before us, I hauled into a bay which lays between the South end of
 133 Lefooga and the North end of Ooleva, and there anchored in 17
 fathom water, the bottom sand with here and there rock. The Dis-
 covery did not get to an anchor till sunset, she touched upon one of
 the Shoals, but backed off again without receiving any damage.

312 As soon as we had anchored I sent Mr Bligh to Sound the bay in
 which we lay and my self accompanied by Mr Gore, landed on the
 Southe[r]n part of Lefooga to examine the Country and look for
 fresh water, not that we wanted any having filled all our casks at the
 last place, but had been told that at this part of the island was some
 better than any we had met with. This will not be the only time I
 shall have to remark that these people do not know what good Water
 is. We were conducted to two wells and found the Water bad in both
 and the Natives told us they had no better.¹ Near the South end of

349 the Island and on the West side, we met with a artificial Mount,
 223 that had been raised in remote times, as large trees &c^a were growing
 upon it. I judged it to be about Forty feet high and the Diameter of
 its summit measured fifty.² At the foot of this Mount stood a stone
 which must have been hewn out of Coral rock, it was 4 feet broad 2½
 thick and 14 high, and we were told by the Natives present that not
 above half its length was above ground. They called it Tangata
 349 (Man) or Arekee (King) and told us that it was set up and the Mount
 211 raised by some of their fore Fathers in memory of one of their Kings,
 122 but how long sence they could not tell.³ Night coming on we returned
 133 on board, and at the same time Mr Bligh from sounding the bay, in
 which he found from 14 to 20 fathoms water, the bottom for the most

¹ Natives of coral islands did not feel the need of water for drinking, and what they had
 was good enough for fresh-water washing. Hence the difference of opinion between
 [223] Tongans and Cook about what was 'good' water. Cook's men followed the native example,
 e.g. with the muddy and brackish fluid at Nomuka—"but the milk of the cocoanuts in a
 great measure made up for the badness of it; as they were so plentiful that we seldom drank
 any thing else".—Gilbert.

² "In many of our walks about this Island we saw more numerous & extensive planta-
 tions than at Anamocks, & in better order; yet towards the sea side particularly to the
 Eastward, the country is still waste owing perhaps to its being a sandy soil; an artificial
 mount rais'd to a considerable height with an arbour of trees surrounding a green plot
 attract'd our notice; we were busy in forming conjectures as to the use of this spot, when we
 learnt that it was only a decoy for Pidgeons, being inticed thither by its shade & coolness,
 & likely by the natives putting some thing they like, whilst they hide themselves among the
 shrubs, & with a net throw over & catch them."—King, 21 May. This artificial mount has
 now crumbled away, and Lifuka is virtually flat from one end to the other. *Siakeulupo* was
 the name given to the mount where wild pigeons (*lupo*) were snared. As Uoleva, the next
 island south, had a large number of pigeon mounds, and seems to have been a favourite
 spot for the chiefly sport, this mound may quite likely have belonged to the same series.

³ The great stone no longer exists, except possibly underground. There are much smaller
 monumental stones extant, some built into *langi*, and there are said to be two monoliths
 as far away from Lifuka as Niuatoputapu, important enough to have names. But the only
 familiar thing of the sort is the great trilithon called Ha'amonga 'a Maui, at Hahake near
 Kolonga on Tongatapu, which many date from as early as the eleventh century.

1777]

THE TONGAN KING

[115

part Sand but not without some Coral rock. This place is much better sheltered than where we last lay, but between the two is a place much better than either.¹

Lefooga and Ooleva are divided from each other by a reef of Coral rock which dries at low water so that one may walk from the one to the other without wetting a foot. This last island is as barren as the other is fertile, producing nothing but a few scurvy trees and shrubs and wholly without Inhabitants.²

TUESDAY 27th. At day break the next Morning I made the Signal to weigh, and as I intended to attempt a passage to Anamocka by the sw in amongst the islands, I sent the Master away in a boat to Sound before the Ships. But before we could get under sail, the wind became unsettled and made it unsafe to attempt a passage this way till we were better acquainted with it or had a steady wind. I therefore lay fast and made the sign¹ for the Master to return, and afterwards sent him and the Master of the Discovery, each in a boat to examine the Channels as far as they could allowing time to return on board before dark. The wind was unsettled all day and blew in squalls with some Showers of rain. About Noon a large sailing Canoe came under our Stern in which the Indians on board told us was *Fatafee Polaho* King of all the Isles;³ we had reason to doubt this, but they stood to it and now for the first time told us that Feenough was not the King. As it was my intrest as well as inclination to pay my Court to all these great men, without enquiring into the legality of their titles, I sent a boat to bring him on board as I understood he wanted to come. He brought with him as a present to me two good fat hogs, though not so fat as himself, for he was the most corporeate plump fellow we had met with. I found him to be a Sedate sensible man, he viewed the Ship and the several new objects with uncommon attention, and asked several pertinent questions one of which was 'what brought us to these islands'.⁴ After he had satisfied

¹ The anchorage, one takes it, off Pangai, the little township of Lifuka, on the shores of a distinct bay (see Chart XLVI). But though the anchorage is good, Cook would have found an embarrassing number of reefs and shoals interposing.

² Olaiva although as large an island as Laisooga, is intirely uncultivated & almost uninhabited, only a few fishermen live in it. it seems a sandy poor soil in general, but we saw that formerly it had not been intirely neglected, there being appearances of former cultivation, we understood that from terrible Lightning all the possessions of the inhabitants were destroy'd, some kill'd, & the state of the remains of part of the coconut trees we saw, was occasion'd by that lightning; since which no one had chose to make plantations.⁵

—King, 27 May.

³ Fatafehi Paulaho, 36th Tu'i Tonga, c. 1770-84. Fatafehi was a 'family name' of the Tu'i Tonga—not a 'surname', but one much used among the members of his chiefly family.

⁴ 'he now ask'd our business there, where we came from, & where we were going, questions which had never been put to us before; to satisfy him, a map was produced & explained to him, & by his explaining it again to his followers, he shew'd that he was

122 THURSDAY 29th. At day-break the next Morning I weighed with a fine breeze a[t] ENE and stood to the westward, intending to return by the same rout as I came. We were followed by several sailing Canoes in one of which was Fattasee the King, as soon as he got on board he enquired for his Brother and the others who had been on board all night; it now appeared that they had stayed without his leave, for he gave them in very few words such a reprimand as brought tears from their eyes, and yet they were men not less than thirty years of age. He was however soon reconciled to their making a longer stay, for he left his brother and five of his attendants on board. And we had also the Company of a Chief just then arrived from Tongatabu whose name was *Tooboweitoo*;¹ he no sooner got on board than he sent his Canoe away and declared that he and five more who came with him would sleep on board, so that I had now my Cabbin filled with them, and this was all the inconveniency they gave me, for they brought plenty of provisions with them, but this I always looked upon as a present to me and made a return accordingly. About 1 PM the easterly wind was succeeded by a fresh breeze at SSE. Our Course now being SSW or more Southerly we had to ply to windward and did but just fetch the North side of Fodua by 8 oclock, where we spent the night making short boards. The next Morning we plyed up to Callafanga where our friends told us was anchorage. It was 1 PM before we got soundings under the lee or NW side, in 40 fath. near half a mile from the shore; but the bank was steep and the bottom rocky and there lay a chain of breakers to leeward.² All these circumstances being against us I stretched away for Ogodoo with the expectation of finding better anchorage under that island, but so much time had been spent in plying up to Callafanga, that it was dark before we reached the other, and finding no place to anchor the night was spent as the preceding one.

[133] SATURDAY 31st. The 31st at day-break I stood for the Channel, which is between Ogodoo and the reef of rocks that lay to the westward of it,³ but on drawing near, I found the wind too scant to lead us through, and therefore bore up without the reef and stretched to

[643] by his chief wife died young. Paulaho, though the younger of the two, became Tu'i Tonga first because of the superior power of his mother's people.

[648] ¹ Tupouto'a, 'Tupou the brave', or 'Tupou the warrior'. This was the name of Paulaho's mother's father.

[644] ² The name of this island was previously rendered by Cook as Callefango: Lofanga. Anchorage in its vicinity would have been all too dangerous. There are reefs, shoals or foul ground off it in every direction; the chain of breakers Cook mentions was probably on the detached coral shoal called Luapuki, three quarters of a mile WNW of the western extremity. This is fairly typical of the waters through which Cook was now making his way. ³ Kotu is itself surrounded by a reef: there is a clear channel between it and the reef to the westward, Hakau Kopau, but it is only a mile wide—not much room for manoeuvring.

[1777]

RISKS OF THE DISCOVERER

[119]

the sw till 11 oclock when finding we got nothing to windward and being apprehensive of losing the islands with so many of the Natives on board, I tacked and stood back intending to wait till some more favourable opportunity. We did but just fetch in with Fodua, between which and Ogodoo we spent the night under reefed Topsails and Fore sail, the Wind blew fresh and by squalls with rain and we were not without apprehensions of danger. I kept the deck till 12 oclock when I left it to the Master, with such direction as I thought would keep the Ships clear of the dangers that lay round us; but after making a trip to the north and standing back again to the south the Ship, by a small shift of the wind fetched farther to windward than was expected; by this means she was very near running plump upon a low Sandy isle surrounded by breakers.¹ It happened very fortunately that the people had just been turned up to put the Ship about and the most of them at their stations, so that the necessary movements were not only executed with judgement but with alertness and this alone saved the Ship. The Discovery being a stern was out of danger. Such risks as these are the unavoidable Companions of the Man who goes on Discoveries.² This circumstance frigh[t]ened our passengers so much that they express'd a strong desire to get a shore, as soon as it was light I hoisted out a boat and sent them to Ogodoo, and ordered the officer in the boat, after landing them to Sound along the reef which spits off from that island, for Anchorage, for I was as tired

JUNE
Sun. 1

¹ I kept deck ... breakers: at this point in the printed text, which follows Cook pretty closely, except for giving the name of the sandy isle, 'Footoo Footoo', Bligh has a queer outbreak of vanity: 'In Capt. Cook's Journal it stands thus "Mr. Bligh & myself before dark having determined on the proper method to keep clear of the Shoals I kept the first watch to be relieved by him at 12 O'Clock, & left him with the charge, but after making a few boards to the northward (the ship &c &c)"—& then follows as above engross'd.'—Bligh AL, I, p. 270. It is very probable that Cook discussed the matter with his master, but how is Bligh so confident about what Cook wrote in his journal? King writes, '... the Master whose watch it was (one of the officers being sick) immediately threw all aback & afterwards wore ... otherwise we might have ended our discoveries here.'—Putuputus is a sandy cay twelve feet high, on a reef three miles N.W. of Kotu. It is the most northerly of the Kotu group, and about as dangerous an obstacle for a sailing ship on a squally rainy night as can well be imagined. [133]

² The observation contained in this last sentence may be taken as pretty representative of Cook's philosophy of exploration, once he had made all due preparations. It is a sigh rather than a groan. There is more alarm expressed in two of the *Discovery* records. 'Being obliged to tack almost every half hour on account of the Reefs & Islands, we were obliged to keep All Hands upon Deck (during the Night; for we were very near the Reefs before we could see the Breakers; & consequently had but just time to get the Ship about,—which rendered it alarming & disagreeable.'—Bayly T.—'At 9 [AM] saw the Resolution. At 4 past she began to fire being in danger they where so near a Reef that lays off from one tree Island that they had neither room to stay or weer but from being Exceedingly quick in throwing all aback just clear'd the Reef—from dark last night till 3 oclock this Morning our Situation was Extremely dangerous rendered so from the darkness of the weather and the short distance we had to ply in And had it not cleared up at the time it did there is all the reason in the world to suppose that both the Ships would have been on shore. ... —Portlock, 1 June. Portlock seems original in his name 'one tree Island'; Putuputus has only a few bushes growing on it, but it may have had a solitary coconut in 1777. [137]

[1777]

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Resolution AND Discovery

[June

122 with beating about amongst the islands and shoals as they were and determined to get to an anchor some where or a nother if possible.

● [133] While the boat was absent, we attempted to turn the Ships through the Channel, between the Sandy isle and the reef of Ogodoo, in expectation of finding a moderate dept[h] of Water behind them to anchor in, but meeting with a Tide or Current against us were obliged to desist and anchor in 50 f^m water with the Sandy isle

[642] bearing EBN one mile distant. We lay here till the 4th during this time we were several times visited by Fattafee the King, Toobow-eitoa, and people from the neighbouring island[s] came off to trade [643] notwithstanding it blew very fresh most of the time. The Master was [439] sent to sound the Channels between the islands to the Eastward and I landed on Ogodoo to examine the island and take a View of the [134] Shoals or reefs about it. I walked all over it, the north part is low land, the soil composed of Sand and Mould. The South end is elevated and the soil a red sandy clay without a stone, every part is [133] cultivated and there are some pools of dirty Water on the low ground [311] and all of them more or less brackish. [312]

Wed 4 On the 4th at 7 AM we weighed with a fresh gale at ESE and stood away for Anamocka where we anchored the next Morning nearly in

122 the same place where we lay before. I landed soon after and found the Inhabitants very busy in their plantations diging up yams to [439] bring to Market, they were now in the greatest perfection and we

241 procured a good quantity for pieces of iron. Before I returned on board I visited the several places where Mellon seeds & plants [199] had been planted and had the Mortification to find that the most of them were destroyed by a small ant,¹ but [the] Pine-able plants

Frid 6 I had planted were in a flourishing state. About noon the next day

164 Feenough arrived from Vaughnough he told us that several Canoes [122] laden with hogs &c* that sailed with him from the island were lost in the late blowing weather and every soul in them perished; but as this melancholy tale seemed not to affect any one of the Indians, I did not beleive it; yet it might be, for it had blown hard for these parts, in so much that the King and others at Ogodoo durst not venture to Sea when we did, but desired I would wait for them at Anamocka which was the reason of my anchoring there the second

Sat 7 time. The following Morning the King and all those who had been [643] wind bound with him arrived, I was at this time a shore with Feenough and left him to visit the other; who I found seting with a few [648] people before him, but as several came to pay their court to him [634]

[136] ¹ The ant in Tonga is called *le*; but there are more than one species, so that it is impossible to identify the criminal.

1777]

STEERING FOR TONGATAPU

[121

the circle increased pretty fast. At length Feenough came and took his seat amongst the rest, some little conversation passed between these two Cheifs which none of us understood, nor was we satisfied with Omai's interpretation of it,¹ we were however by this time fully satisfied who was the greater man of the two. I took them both aboard to dinner but only Fattafee sat at table, Feenough made his Obiesance in the usual way and retired out of the Cabbin; this confirmed what the King had before told us, that Feenough could neither eat nor drink in his presence.²

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SUNDAY 8th. At 8 oclock the next Morning we wieghed and steered for Tongataba having a gentle breeze at NE and about fourteen or fifteen sailing vessels in company every one of which considerably out run us.³ Feenough was to have taken a passage with us in the Ship but prefered his own Canoe and put two men on board to conduct us to the best anchorage. We steered saw by compass the Course the Canoes steered; at 5 oclock in the evening we saw two small islands bearing west about 4 leagues distant. Our pilots called the one Hunga happi and the other Hunga Tonga;⁴ they lay in the Latitude of 20°36' and 10 or 11 leagues from the west point of Anamocka in the direction of [s 46° West].⁵ We continued the same Course till 2 AM the next morning, when seeing some lights ahead and not knowing whither they were on shore or on board the Canoes, we hauled the Wind and made a short trip each way till day-break, when we resumed our course to the saw. And presently after saw several small islands a head and Middleburg and Tongatabu beyond them; the depth of water at this time was 25 fathom over a bottom of broken coral and sand. The depth of water gradually decreased as we drew near the isles which lie ranged along the NE side of Tongatabu. By the direction of our Pilots we steered for the middle of the island and for the widest space between the small islands with our boats ahead

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¹ 'Omai was still too much hurt at having taken a name that was not the highest, to interpret faithfully. . . . '—King.

² No inferior could eat or drink in the presence of his superior. We have in another entry for this date a little sign of shipboard friction which is interesting: 'I went on Shore with my Astronomical Quad^t & the watch & observed equal altitudes of the Sun in order to determin its Error from mean time; & returned on board again in the Evening very safe, with the watch.—(after the most eminent Danger, & Difficulty of preserving the watch, owing [to] the Pride & obstinacy of our First Lieut^t M^r Burney.)'—Bayly T. Burney may have been rather a trial to Bayly (cf. II, p. 135, n.), and perhaps Bayly was a bit too solemnly professional for Burney.

³ 'These Canoes rund us nearly out of sight before the evening, they sail about 3 Miles to our two, in light winds. They carry about 50 People (& their luggage) in general. But are capable of carryin[g] as many more.'—Bayly T.

⁴ Hunga Ha'apai and Hunga Tonga, both high islands, about a mile apart. Hunga: 'turned towards'. They are about 31 miles northward of Niu Aunofu, the most northerly point of Tongatapu. Cook's course lay well to the east of them.

⁵ These figures are a later insertion in the MS, probably by King.

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[1777]

122]

Resolution AND Discovery

[June

122 sounding.¹ Insensibly were we drawn upon a large flat on which lay
 133 innumerable coral rocks of different depths below the surface of the
 water. It was not possible to keep the ship clear of them, all our care
 and attention did not prevent her from striking on one of them, nor
 did the Discovery who followed us escape any better, fortunately
 neither of them stuck fast nor received any damage.² We could not
 return without increasing the danger, as we had come in before the
 wind, nor could we anchor but with the certainty of having our cables
 instantly cut in two by the rocks. We had no other resource but to
 proceed, to which we were encouraged not only by being told, but
 seeing deep water between us and the shore; but to be better in-
 formed the moment we found a spot where we could drop the anchor
 clear of rocks we came to and sent away the Masters with the boats
 to sound. Soon after we had anchored which was about noon several
 of the Inhabitants came off in their canoes to the Ships. These as also
 our two Pilots assured us we should find deep water farther in and a
 bottom free from rocks, and so it proved for about 4 PM the boats
 made the signal for having found good anchorage—upon which we
 weighed and stood in till dark, then anchored in 9 fathom a fine
 clear sandy bottom. During the night had some showers of rain, but
 towards the morning the wind shifted to the South & se and brought
 on fair weather. At day break weighed and worked in for the shore,
 meeting with no obstruction but what was visible and easily avoided.

648 While we were plying up to the harbour the Natives directed us to,
 643 the King kept sailing round us in his Canoe, there were at the same
 [164] time a great many small Canoes about the Ships; two who could not
 get out of his way he run quite over with as little concern as if
 they had been bits of wood. Amongst many others who came on
 board the Ship was Otaga who was so usefull to me when I was here
 last voyage,³ and one Toobough who at the same time was the Friend

¹ That is, they were coming down through the Lahi passage, sown with coral rocks. A channel was swept through it 165 years later, in 1942.

² 'We found this a most confounded navigation. The Bottom, which we too clearly saw a continued bed of Coral Rock, very uneven, with here and there a mischievous rascal towering his head above the rest, almost to the waters Edge; most providentially we had exceeding smooth Water, with just such a breeze as we cou'd wish, and of course took every precaution we cou'd suggest, such as Boats a head, a good look out &c; but these lofty Gentry's heads were so small, that 'twas great odds but you mis'd them with the Lead in the Boats, be as cautious as you wou'd. About 10 we gave one of them a rub, but fortunately receiv'd not the least damage.'—Clerke. 'At 10 [AM] the water in places shoal and the passage very doubtfull struck on a patch of Coral Rock, set Top Gallant sails and fore Sail and force'd her over without any damage, Just Abt the same time the Resolution struck but without damage. . . . it was very Lucky it happened to be very near high water At the time the ships struck or in all probability they might have stuck and receiv'd material damage.'—Portlock.

³ Siata'atongo, the grandson of a great chief, Mumui, who was to become 12th Tu'i Kanakupolu. Both references to him in II, pp. lxxv and 249, n. 3, are badly confused.

1777]

TONGAN CHIEFS

[125

sails a shore to repair and a party cutting wood for fuel and Plank for the use of the Ship. The gunners of both Ships were ordered a shore to traffick with the natives, who thronged from all parts with Hogs, yams, & cocoanuts &c^a so that our little post was like a fair and the Ships so thronged that we had hardly room to stir on the decks. 122 439

Feenough had taken up his residence near us, but he was no longer the acting man, we however found him to be a man of consequence and property and still continued to make us presents of Hogs &c^a. As to the King scarce a day pa[s]t that had not some thing considerable from him. We heard of other great men which we had not yet seen particularly one *Mariwaggy*,¹ who we understood was Fattafee Polaho's Father and the first man on the island, but that he was an old man and would not visit us; some even hinted, that he was too great a man to be seen by us, at least so Omai interpreted it.² The account they gave of this Chief made me very desirous of seeing him and I at last prevailed on Fattafee the King to accompany me the next Morning to the place of his residence. Accordingly we set out pretty early, accompanied by Captain Clerke in his own boat, Omai and some of the officers. We proceeded round and to the Eastward of the isles that forms the harbour and then entered a large inlet up which we rowed about one league and then landed near to the residence of this great man.³ We had no sooner landed then we were told that he was gone to the Ships. I suspected this was not true, but that he was gone out of the way in order not to be seen by us, as some had suggested. Pequed at being thus disappointed, after a short stay I returned on board, when we found *Mariwaggy* had not been nor was he expected. It however afterwards appeared that Omai 648 634 431 648 643 [431] Thur. 12 [124]

¹ Macaliuaki.

² Macaliuaki was certainly Paulaho's 'classificatory father': the term *tamai*, father, would include all paternal male affines. He was indeed a very great man, and in a secular sense certainly the 'first man on the island', and indeed in all Tonga; for having been Tu'i Ha'a Takalaua (the fourteenth and last of the succession), hence deriving great prestige and privilege, he became Tu'i Kanokupolu (the eighth of that line)—and it was the Tu'i Kanokupolu who was the effective principal ruler of the group. Cf. II, p. lxxv. A venerable figure, 'grey with age', as Cook notes below, he was to die later in this year 1777.

³ The place of this landing is traditionally remembered. Cook had to take the same circuitous route anyone must take nowadays from the Nuku'alofa jetty—round the islands and into the lagoon through an extraordinary mass of coral reefs. The lagoon forms two arms. Just off the present road, which runs close to the lagoon, a little south-west of the large village of Mu'a, is a very little cove, part of a larger wide cove at the bottom of the eastern arm of Mu'a inlet; and here, it is said, Cook stepped ashore. He could hardly do so now. Mangroves have crept all round and the shore is very muddy; trees hang over the water and the coral of the bank has fallen away in large pieces; a few yards from the water a huge banyan (*Ficus obliqua*) marks the scene. The place is called Alaki, though the village of Alaki has been moved a mile or so to the south. It is possible, however, that tradition is mistaken in being quite so precise, because the text (p. 138 below) refers to the village as 'Moa' or Mu'a; ancient Mu'a, however, was very near, and it is even possible that Alaki village did not then exist. 487 [37] [33] [361]

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FOOLISH OFFICERS

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King, he not knowing what step I should take and fearing the worst, ⁶⁴⁸ went off early the next morning and also Feenough so that we had ^{Mon. 23} not a Chief of any authority left with us. I was very much displeased ⁶⁸⁵ at this and gave Omai a reprimand for meddling in it and put him ⁶⁴³ upon his mital to bring his friend Feenough back, which he did ⁶³⁴ towards the evening, but not before he was well assured I should take no step to oblige them to return what had been taken from the gentlemen. This declaration of mine brought back the King the day after. Both these Chiefs very justly observed to me, that when any of my people wanted to go into the Country they ought to be made acquainted with it, when they would send people along with them and then they would be answerable for their safety. And I am convinced from experience, that by observing this method a man and his property is as safe amongst these islanders as most other parts of the World. Notwithstanding I gave myself no trouble about these things, the most of them, through Feenough were got back except one Muaket and a few other things of less Value. By this time also we had got the Turkey Cock and most of the tools &c^a which had been stolen from our workmen.¹

WEDNESDAY 25th. On the 25th two boats which I had sent to look ¹²² for a Channel by which we could get to sea returned, the Masters ^[137] who commanded them, reported that the Channel to the North by ¹³⁷ which we came in was highly dangerous, being full of Coral rocks from the one side to the other, but that to the Eastward was a very good Channel,² but as it was very much contracted in one place by the islands it would require a leading wind to get through it, that is a westerly wind which we had found did not often blow. We had now compleated the Ships with Wood and Water, and finished the repairs of our sails, and had little more to expect from the Inhabitants.³ However as an Eclipse of the Sun was to happen on the 5th of the next Month, I resolved to wait till that time was elapsed to have a chance of Observing it.

¹ Williamson and Bligh, among others, had gone out, meaning to be away no more than one day; they crossed the lagoon and made a large circuit round to the west and back. Both Williamson and Bligh lost their guns, and Williamson, after failing to get his returned, made malicious remarks in his journal about Cook. It was very difficult to instil prudence into the complete companies of two ships. For Williamson's account, see pp. 1342-3 below.

² The Piha passage of the modern chart.

³ 'As I have now a vast number of Hogs on board, & the Sea agreeing exceeding ill with their Constitutions, (for they die like rotten Sheep as soon as you get to Sea and begin to dance a bit) to prevent which I kill'd and salted the major part of them. This seems a happy peculiarity to our Isle; there is scarcely a Creature to which it gives Existence but you may transport to its Antipodes, some we cou'd mention wou'd grow fat by the way.'

—Clerke, 23 June.

1777]

A COUNTRY WALK

[139

tops of the Mounts round the houses, there were a few rude Images of the human figure, of different ages. We were told they were there as monuments to the Memory of the dead and not the representation of any Deity.¹ Such monuments they seldom raise for these seemed to be very old. In one of the house[s] was the Carved head of an Otaheite Canoe which had been driven a shore on their coast and deposited here. After dinner, or rather after we had refreshed our selves on what we carried with us, some of us took a Walk into the Country making a pretty large circuit attended by one of the Kings Ministers,² our train was not great as he would not suffer the rabble to follow us, he also obliged all those whom we met to sit down till we pass'd a respect due only to their Kings. We found by far the greatest part of the Country cultivated and planted with one kind of production or a nother and the most of these plantations were fenced round. Some old Plantations lay uncultivated or in fallow, and there were places that had never been touched but lay in a state of Nature but even these places were usefull in affording them timber &c³ with which they were generally covered. We met with several large uninhabited house[s] which we were told belonged to the King or the Lord of the Manor;⁴ there were many publick and well beaten roads and as many foot paths leading to every part of the island. The roads were good and the Country level consequently traveling was easy. On the most elevated parts, we met with coral rock close to the surface, perforated and cut into all those inequalities we see them in the wash of the sea, yet these very rocks with hardly any soil upon them were covered with a luxuriant vegetation. We were conducted to several little pools and some springs of Water, but the most of them were either stinking or brackish tho recommended as excellent.⁵ The

¹ These three mounts seem to have been the great *langi* called Tuoteau, Katon and Tuofefafa, with a smaller fourth one in front, unnoticed by Cook, called Tauatonga. Cook does not mention stone-work, apart from the wall, so the stone of the *langi* may have been heaped over with earth. These lay to the north of the eastern side of the great *mala's*, and in front of them was a smaller *mala's*. Within them were the stone vaults or burial chambers. The houses, *fakalalia*, were set up to protect the central part of the covering of fine black volcanic pebbles, called *kilikili*, which marked a vault. The information about the 'rude Images' being 'monuments' or commemorative figures was probably correctly gathered: cf. II, p. 251. The Tongans did not carve representations of their gods.

² No doubt a *matapule*, one of the non-chiefly but important officials on whom administration so much depended, attendant on a chief and sometimes his spokesman.

³ By 'Lord of the Manor' Cook presumably means an 'iiti, a great chief or 'noble', whose power, under that of the Tu'i Tonga, was territorial, as well as extending to the persons of the common people.

⁴ Williamson, 20 June, provides a dissenting opinion: '... I have great reason to think that fresh water might be had by sinking a well at some distance from the lagoon, & am the more confirmed in this opinion from the many wells of delightful water, which we met with during our perigrinations, some not less than thirty feet deep, & made extremely neat & clean.'

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[June

312 [Onnevy]¹ an island which lays before the Inlet and on the north side of the Eastern Channel, I landed on the island in order to taste it as it had been greatly extoled by all on whom we enquired, but we found it as brakish as most we had met with; it was in little holes which had been dug in the sand for the purpose about a hundred yards from the sea, and was perhaps the worse for being at this time high-water. After leaving this island, took a View of a curious Coral rock, which was elevated about 10 or 12 feet above the surface of the Sea that surrounded it, its base was not above one third the circumference if its sumit, which last I judged to be about one hundred feet; there grew upon it the Wharra or Palm² and Etoa tree³

648 and a species of firn and grass. When we got on board I found every thing had been quiet during my absence, not a theft had been committed of which Feenough who undertook the Management of his Countrymen piqued himself not a little; this shews what power the 685 Chiefs have when they have will to execute it, but this we were seldom to expect sence whatever was stolen from us generally if not 634 always went to them. This good order was of short duration for the 648 next day, six or eight Indians assulted some of our people who were Sat. 28 sawing plank, they were fired upon by the Sentry and one was supposed to be wounded, and three others were taken, these I kept confined till night and did not then dismiss them without punishment, after this they behaved with a little more circumspection and gave us much less trouble. This change was certainly occasioned by the Man being wounded, for before they had only seen the effect of fire arms but now they had felt it. At first I thought the man had only been wounded with small shot; the repeated insolence of the Natives had induced me to load the Sentries Muskets with small shot and authorized them to fire on particular occasions; but Mr King and Dr Anderson being in the Country, met with this man, and found he was wounded with a Musket ball;⁴ the wound was left to Nature, which on many occasions is the best surgeon, it was not dangerous and the man was in a fair way of recovering. I could never find out how this Musket came to be charged with ball, there were enough ready to swear that it was only charged with small shot.

122 Nothing of note happened till the 2nd of July, when on looking at the Micrometer belonging to the Board of Longitude, found some of

¹ 'Onewé. This name is substituted (by King?) for a deleted 'Pangimodoo', in writing which Cook obviously made a slip.

² Fala (Tahitian *fers*) or pandanus. It was often called the screw-palm or screw-pine, though the origin of 'screw' in this sense is unknown; and 'screw' is probably Cook's missing word.

³ Toa, *Casuarina equisetifolia*.

⁴ See King, p. 912, n. below.

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DEPARTURE FROM TONGATAPU

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was brought him that I had striped in conformity to their custom and then told Omai he might go too, provide[d] he would comply with all the necessary forms, Omai had no objection as it was only confirming to the Custom of his own Country, he was furnished with a proper dress and appeared at the ceremony as one of them. Probably one reason why we were excluded at first was the apprehensions that we would not comply with all the necessary forms. 123 651 796

While I was at [Moaa] I ordered the Horses, Bull cow and goats to be brought thither, thinking they would be safer under the eye of the chiefs, than left in a place that would be in a manner deserted as soon as we were gone. Besides these Cattle we left with them a young Boar and three young sows of the English breed: they were exceedingly desirous of them, foreseeing no doubt that they would greatly improve their own breed which is rather small, Feenough also got from us two Rabbits a Buck and a Doe and before we left the island were told she had brought forth young ones. If the Cattle succeed, of which I have no doubt, it will be a vast acqu[i]sition to these islands, and as Tongatabu is a fine level country the horses will prove a usefull animal. 231 77

THURSDAY 10th. On the 10th at 8 oclock in the Morning, we weighed anchor and with a steady gale at SE turned through the Channel, between *Maccaha* and *Manoaaffer*³ it being much wider than the one between the last mentioned island and *Pangemaudo*.⁴ The flood set strong in our favour till we were the length of the Channel leading up to the Lagoon,⁵ where the flood from the Eastward meets that from the west, this together with the indraught of the Lagoon and shoals before it, causeth Strong riplings and whirlpools.⁶ To ad[d] to these dangers the depth of Water in the channel exceeds the length of a Cable, so that there is no anchorage unless close to the rocks where you met with 40 and 45 fathom over a bottom of dark sand, but then here you would be exposed to the whirlpools. This frustrated the design I had formed of bringing the Ships to an anchor as soon as they were th[r]ough the Narrows, and going to see the funeral, I chose rather to lose that sight than leave the ships in a 122 133

³ Makaha's and Monu afe.

⁴ Cook has here made a slip: for 'last mentioned' read 'first mentioned'. The distance between the reefs on which Makaha'a and Monu afe lie, measured on the chart, is about 2½ cables—some 500 yards, though the channel ('the Narrows') now used is barely 1½ cables wide. The Monu afe reef runs eastward to form the northern side of Piha passage. The distance between the Makaha'a and Pangaimotu reefs is about ½ cable—100 yards or so.

⁵ The Water is fortunately so clear, that we can see any danger before we are absolutely upon it. This is our principal dependance, for as I before observ'd, the rapidity of the Tide render sounding of very little Consequence.—Clerke.

⁶ 'Heavy tide-rips and overfalls', to quote the *Pacific Pilot*, II, p. 368.

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[July

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situation in which I did not think them safe. We continued to ply to windward between the two tides without either gaining or losing an Inch till near high water, when by a favourable slant, we got into the Eastern tide influence and where we expected to find the Ebb to run strong to the Eastward in our favour, but it proved so inconsiderable that at any other time it would not have been noticed. This informed us that most of the Water which flows into the Lagoon comes in from the NW and returns the same way. About 5 PM finding we could not get to sea before it was dark I came to an anchor under the shore of Tongatabu in 47 fathom water, and about two Cables length from the reef which lays along the shore of the island. The Discovery dropped anchor under our Stern, but before the Anchor took hold She drove off the bank and did not recover it till after Midnight.

Frid. 11 We remained at this station till 11 o'clock the next day, when we weighed and plied to the Eastward, but it was 10 PM before we weathered the East end of the island and were enabled to stretch away for Midleburg or *Ea oo we*¹ (as it is called by the Inhabitants)

Sat. 12 where we anchored at 8 o'clock the next Morning in 40 fathom water over a bottom of sand interspersed with Coral rocks; the extreame of the island extending from N [40°] E to S [22°] W, the high land S 45° E and Tongatabu extending from N [70°] W to N [19°] W distant from the shore about half a mile. We had no sooner anchored than Taoofa the Chief and several other made us a visit and seemed to rejoice much at our coming: this Taoofa was my Tayo when I was here last voyage, consequently we were no strangers to each other.² Soon after I went a shore with him to look for fresh water, the Chief object that brought me to the island, for I had been told here was a stream running from the hills into the Sea, but this was not the case now. The first I was conducted to was a brackish spring between low and high water mark, amongst rocks in the Cove where we landed³ and where no one would ever have thought of looking for fresh Water, and yet I believe the Water might be good was it possible to take it up before the Sea Water mixes with it. Finding we did not like this Water they took us a little way into the island, where in a deep chasm was some very good Water which at the expence of some time and trouble might be conveyed down to the Sea by means of Spouts or troughs that might be made with Plantain leaves and the stem of the tree, but rather than be at that trouble I resol[v]ed to make what we had got serve.

¹ 'Eua.

² Ta'aua'a: the man Cook knew as 'Tioonee' on the second voyage: II, p. 245.

³ Ohonus; the anchorage, 'English Road', was the same as on the second voyage. Cf. II, p. 245, n. 1.

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THE FACE OF 'EUA

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Before I returned on board I set on foot a trade for Hogs and Yams, 439
 of the first we got but few but of the latter plenty. I put a shore at
 this island the Sheep I gave to Mariwaggy, viz a Ram and two Ewes 231
 of the Cape breed; they were intrusted to the care of Ta-oo-fa who 177
 seemed to be proud of his charge. As the Dogs had not yet got to this
 island I looked upon it to be the properest place for sheep.

SUNDAY 13th. The 13th in the after noon a party of us traveled to the 123
 top of the highest hill in order to have a View of the interior parts of
 the island. About half way we crossed a deep Valley, whose bottom 133
 and sides were clothed with timber, though composed of hardly any
 thing but coral rock, which, as was observed on Tongatabu, was per- 137
 forated into all those holes and inequalities we find it on the Sea
 Coast, though this could not be less than two or three hundred feet
 above the level of the Sea. Indeed we found the same Coral till we
 began to approach the summits of the highest hills, these were chiefly
 composed of yellowish soft sandy stone. The soil for the most part is 134
 a redish Cley which in many places seemed to be very deep.¹ On the
 very summit of the highest hill is raised a round platform or Mount 345
 of earth, supported by a wall of Coral stone, which to bring so high
 must have cost much labour. Our guides told us that this Mount was
 raised by order of their Chief and that they sometimes met there to
 drink Cava²—there being a spring of very good Water not many 276
 paces from it, and about a mile lower down a running stream which 312
 we were told finds its way to the Sea when the rains are copious; we
 also met with Water in many little holes so that by digging no doubt
 but great plenty would be found. From this hill we had a full View 133
 of the whole island except a part of the south point; the se side from 137
 which the hills are not far distant, rises with very great inequalities
 directly from the Sea, so that the plains and Medows, of which here
 are some of great extent, lay all on the NW side; and as they are

¹ 'Eua geologically is an interesting combination of the coral and the volcanic island. Coralline limestone was deposited on an underwater volcanic base; then renewed volcanic activity was followed by intermittent uplift, and later tilting which made the east and south sides higher than the west and north ones. Hence the combination of coral rock, soft volcanic tuff and volcanic soil which Cook describes in these last two sentences, and the landscape he describes further on. Parts of the island were naturally very fertile. To the tributes printed in II, p. 260, n. 4 may now be added one from Edgar. 'This little Island may be stiled the Montpelier of the Friendly Isles—the Land is higher than any of the others, and affords some of the most Romantick & beautiful Valleys in the World the greatest part of this Island is not planted the Earth or Soil of which bears the Strongest resemblance to red Ocre—tho' there is great abundance of every thing for it's inhabitants the Walks are enlanching and the whole Island is a little Paradise.' 133

² It was an *asi*, or 'rest-mound', a mound built for a particular chief, in some advanced spot, where he might take his ease, and recreate his spirit with the view, which Cook goes on to describe. Sometimes the ownership would lie in the whole chiefly family. The Tongans were very conscious of natural beauty, as well as of the pleasure of cooling breezes. 823
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[July

adorned with tufts of trees and here and there plantations, make a very beautiful Landskip from whatever point they are viewed. Whilst I was viewing these delightfull spots, I could not help flatering my self with the idea that some future Navigator may from the very same station behold these Medows stocked with Cattle, the English have planted at these islands. Our guides informed us that all or most of the land on this island belonged to the great Lords of Tongatabu and that the Inhabitants were only tenants or rather Vassals to them; indeed it seemed to be the same at all the other isles except Anamocka, where there were some chiefs who seemed to act with some kind of independency.¹ Omai who was a great favourite with Feenough and these people in general, was offered to be made Chief of this island if he would stay amongst them, and it is not clear to me but Omai would have stayed if I had approved of it, but altho I disapproved of it, it was not because I thought he would do better in his own Native isle. The next Morning I planted a pine apple and sowed the seeds of Millons &c^a in the Cheifs Planatation, and had a dish of Turnips to dinner, being the produce of the seeds I left last Voyage.

Mon. 14

Tues. 15

Wed. 16

The 15th I had fixed upon for Sailing, till Taoofa press'd me to stay a day or two longer to receive his present of yams &c^a this and the daily expectation of seeing some of our friends from Tongatabu made me comply. Accordingly the next day I received the Cheifs present consisting of two small heaps of yams and some fruit. On this occasion most of the people of the island had assembled at the place, and as usual gave us not a little trouble to prevent them from pelfering whatever they could lay their hands upon. We were entertained with Cudgeling, Wristling and Boxing Matches, the latter both by Men and Women. And in the evening we were to have had singing and dancing, but an accident either put a total stop to it or at least prevented any of us from staying a shore to see it. This was a party of the Indians knocking down one of my people and striping him of every thing he had on his back. On hearing of this I immediately seized on two Canoes and a large hog and insisted on Taoofa causing the things to be restored and the offenders to be delivered up to me; he seemed much concerned at what had happened and forthwith took the necessary steps to satisfy me. This affair, so alarmed the people that most of them fled, however when they found I took no other measures to revenge the insult they returned.² It was not long

¹ This last clause is rather difficult to follow, unless Cook is referring to the pretensions of Finau—and the argument here seems to be political. The sentence generally seems to overdo the territorial power of the 'great Lords', although some of them had possessions in other islands than Tongatapu. 'Tenants' would certainly be more correct than 'vassals'.

² The natives here stript W^a Collect y^a Capt^{ss} steward naked except is shoes, as he was

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FRIENDLY ISLANDS DESCRIBED

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what is merely Ornaments may be highly valuable at one time and not so at a nother. When we first arrived at Anamoca the people would hardly take them in exchange for fruit, but when Feenough arrived they rose in their Value to what I have just mentioned. 439
[634]

For some of the above mentioned articles every refreshment may be procured that the islands produceth and which is Hogs, Fowls, Fish, Yams, Bread fruit, Plantains, Cocoanuts, Sugar Cane and in general every[thing] that is to be got at Otahiete or the Society isles. [634]
433
[439]

Their Yams are excellent and when grown to perfection keep very well at sea; but their Pork, Bread fruit and Plantains altho very good are nevertheless much inferior to the same articles at the Society isles. Good Water a very Matirial article to Shipping is scarce at all these islands, its true it is to be found on them all but then it is either too inconsideral or ilconvenient to come at: but sence they afford plenty of Provisions and Cocœanuts one may very well despence with¹ such Water as is to be got and if one is not over nice there will be no want. While we lay at Anchor under Ogodoo, some people from Oghao informed us, that there was a Stream of water in that island which came from the Mountain and run into the Sea on the sw side of the island where there was anchorage, that is on that side facing O'tafoa, an island remarkable by having a considerable Volcano in it which burnt Violently all the time we were in its neighbourhood. Oghao and O'tofoa are also remarkable on account of their height: it is from the latter they get the black Stone on which they make their hatchets and other stone tools.² 312
133
[312]
[324]

Under the denomination of *Friendly Isles* we must include not only *Happi* which I visited but all those that have been discovered nearly under the same Meridian to the North,³ as well as some others which have never been seen by any European but are under the Dominion of *Tongatabu*, which is the Capital (tho not the largest) and seat of Government. If we credet the Inhabitants this *Archipelago* consi[s]ts of One hundred and fifty three islands,⁴ some indeed are mere spots and without Inhabitants, and others must lay in Groups like those about 101

for blue made it the fashionable one, & all others were in a Manner despised; Green & red however latterly began to rival it. Red cloth or bays was also much esteem'd, & linnen. [439]

...—King, 17 July.

¹ *despence with*, in the sense here, I think, of 'put up with'.

² There was naturally a plentiful supply of basalt on the volcanic Tofua.

³ Cf. II, p. 449, where Cook virtually settles the limits of the Friendly Islands.

⁴ Cf. p. 100 above. 'We have the names of 120 diff^t Islands & many have reckon'd by small stones 150: amongst these are doubtless, included every small spot, but there are 12 which they say are high like Eoœa & thirty seven large, of their size we can only judge in general from their deeming Anamœoka a small Island & Tonga-tabœœ a large one, but amongst all this Group, there are three, which by many accounts, & being frequently mention'd are full as considerable as Tonga-tabœœ; these are Va'vaœœ, Hamœœ & Feeœœ. ...—King, f. 87.

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SAMOA AND FIJI

[163

we know of, except by Tasman, who in his Chart lays down a small island nearly in the situation I suppose Vaughwaugh to be, that is in about the Latitude of 19° but then this island marked on the chart is very small whereas Vaughwaugh is said to be larger than Tongatabu and with high Mountain[s].¹ I certainly should have gone to this island with Feenough from Happi, had he not then told me it was an inconsiderable island and without a harbour, but Fattafee the King assured me afterwards that it was a large island and not only produced every thing in common with Tongatabu, but had several streams of fresh Water, and that there was as good a harbour as the one in Tongatabu and added if I would go there he would accompany me, and if I did not then find every thing true he had told me I might kill him, I had no doubt but that he told the truth and that Feenough from some Views or other had deceived me.

Hammoah which is also under the dominion of Tongatabu lies two days sail to the North or NW of Vaughwaugh, it is described as being the largest of all the islands, with harbours and every other necessary.²

Fidgee lays three days sail from *Tongatabu* in the direction of NW, they describe it as a high but very fruitfull island abounding with Hogs, Dogs, Fowls and all the kinds of fruit and roots that are found on any of the others.³ It is not subject to Tongatabu on the Contrary they frequently make War on each other and it appeared from several circumstances that these people stand in much fear of those of Fidgee, and no wonder sence the one is [a] Humane and peacable Nation, whereas the other is said to be Canibals, brave, Savage and Cruel.⁴ That they are Canibals, they themselves do not deny, there were several of them at Tongatabu when we were there of whom we inquired, those I saw was a full shade darker than any of the other islanders,⁵ one of them had a large hole in his left ear and so extended

¹ Tasman's small island was Late, lat. $18^{\circ}50'$, long. $174^{\circ}40'$ W; it is small, but rises to 1700 feet, much higher than any part of Vava'u, the highest 'mountain' on which is just over 600 feet. Vava'u, broken up by water, is not as large as Tongatapu, though it looks about the same size on a general map: Tongatapu covers just over 100 square miles, the whole Vava'u 'district' (i.e. other small islands are added in), only 46.

² Samoa is north-east, not north-west, of Tonga, distant about 360 miles. The story that it was under the dominion of Tongatapu was perhaps wishful thinking: it was invaded by the Tongans from the end of the twelfth century to about 1250, when they were driven out, with appreciation of valour on both sides. But it seems to have paid some tribute.

³ '... it is somewhat surprizing that Capt Cook did not go in search of it according to His usual practice. His reasons for not doing it I can't account for; as we certainly had time while we were lying at Tongataboo.'—Gilbert.

⁴ There is little record of war between Tonga and Fiji. But the prestige of Fiji was high, and adventurous young Tongan chiefs would treat Fiji as a sort of war college, and go across to take part in the tribal fighting there. They also learnt a good deal about canoe-building from the Fijians. The Fijian characteristics noted are all valid enough.

⁵ They were not Polynesians, though Fiji was just outside the 'Polynesian triangle'. The 'full shade darker' indicates the Melanesian strain. Inter-traffic between Fiji and Tonga led to a certain mixture of blood, not confined to chiefly lines.

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[July

563 that it almost reach[ed] his shoulder. The red feathers so often mentioned in this Narrative all come from Fidgee, as also some of their
 449 finest Striped and chequered Cloth and a few other articles. The demand for feathers is so great that it frequently occasions quarrels
 [72] for if the people of Fidgee refuse to Trade, the others rather than go without will fight for them, so at least I have been told. Now I am
 246 again with Canibals, let me ask those men who Maintain that the want of food first brings men to this Custom, what it is that induceth
 804 them to keep it up in the midst of plenty? As these people have no method of Measuring the distance from island to island but by the
 805 time required to sail it in one of their canoes it was necessary to know or at least to form some judgement how far they can sail in a moderate gale in any given time. With this View I went on board
 502 one of them when under sail, and by several tryals with the log found she went Seven knots or mile in an hour, close hauled in a gentle gale. From this I judge they will sail on a medium with such breezes
 502 as generally blow in their sea about seven or eight miles in an hour;
 805 but the length of each day is not to be reckoned at twenty four hours, for when they speak of one days sail, they mean no more than from the evening to the Morning of the same day,¹ that is ten or twelve hours at most. And two days sail signifies, from the Morning of the first day to the evening of the second and so for any other number of
 502 days. In these Navigations the Sun is their guide by day and the Stars by night, when these are obscured they have recourse to the points from whence the Wind and waves of the Sea come upon the Vessel. If during the obscuration both the wind and the waves shift (which seldom happens at any other time within the limits of the trade wind) they are then bewildered, frequently miss their intended port and are never heard of more.

504 Of all the harbours and Anchoring places I have met with about
 1993 these islands that of Tongatabu is by far the best, not only from its great security but for capacity and the goodness of its bottom. The risk we ran in entering it from the North ought to be a sufficient caution never to attempt that passage again with a Ship of burden, sence the other is so much more easy and safe. To sail into it by this eastern Channel, steer in for the NE point of the island and keep a long the North Shore with the sm^l isles on your Starb^d till you are the length of the east point of the entrance into the Lagoon, then edge over for the reef of the isles and follow its direction and it will Con-

¹ Cook has evidently slipped here, and intended 'from the morning to the evening': the correction was thus made in *Voyage*, I, p. 376. The Log, Adm 55/111, has a marginal pencil note in an eighteenth-century hand, 'should be vice versa'.

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ISLANDS COMPARED

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duct you through between Maccaha and Monooaffee¹ or the 4th and 5th isles which you will preceive to lay off the West point of the Lagoon, or you may go between the 3rd and 4th that is between Pangymaudoo and Manooaffee,² but this channel is much Narrower than the other. There runs a very strong tide in both, the flood as I have before observed, comes in from the NW and the Ebb, retur[n]s the same way, but I shall speak of the Tides in a nother place. As soon as you are through either of these Channels haul in for the shore of Tongatabu and Anchor up in the bieght between it and Pangymaudoo, before a Creek leading into the lagoon, into which boats can go at half flood.*

Altho Tongatabu has the best harbour Anamocka furnishes the best Water, though it cannot be called good, however by diging holes near the side of the Pond one gets what may be called tolerable. This island too is the best situated for drawing refreshments from all the other as being nearly in the centre. Besides the road in which we anchored and the harbour within the SW point, there is a creek in the reef before the Eastern Sandy Cove on the North side of the island, in which two or th[r]ee Ships might lay very secure by mooring head and Stern with their anchors or Moorings fast to the rocks.

Happi is a group of islands extending SWBS and NEBN about 19 Miles and are connected to each other by a reef of coral rock. The North end lies in the Latitude of 19°39' S and 33' of Longitude to the East of Anamock[a], between them are a great many small islands sand banks and breakers, so that the safest way to come at Happi is either by the rout I took or round by the North, according to the situation of the Ship bound thither. Lefooga off which we Anchored is the most fertile isle of them all and of course the best inhabited. There is anchorage along the NW side of this island, but it will be necessary to examine the ground well before you moor, for altho the lead may bring up fine sand there are nevertheless some sharp coral rocks that would soon destroy the Cables.

Those who want a more particular description of these islands must have recourse to the annexed Chart, in which every thing is delineated with as much accuracy as circumstances would admit. Recourse must also be had to the same Chart for the better finding out the several stations of the Ships and their rout from the one to

¹ Makaha's and Monu afe.

² It should be Pangaimotu and Makaha'a. Cook's names, repeated from the passage on p. 155 above, suggest that he had got Makaha'a and Monu afe mixed in his mind, though his chart was correct.

* Here he means the passage between Holeva (his 'Observatory Point') and Nukumuku.

A [See eategory 102, p. 104--Analyst]

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[1777]
Resolution AND Discovery

[July

131 the same needle is no new thing, and I should not have taken notice of it, but from a belief that the cause, whatever it is, is in the place and not in the needles, as Mr Bailey found the same or rather more difference.

132 *Tides* The Tides are more considerable at these islands than any other I have met with in this sea that lie within the Tropicks.

At Anamocka it is high-water on the full and change days nearly at 6 o'clock, and the tide rises and falls upon a perpendicular about six feet. In the harbour of Tongatabu, it is high-water on the full and change days at fifty minutes past six, and the tide rises and falls [4 foot 9 Inches] and [3 foot 6 Inches] at the quadratures. In the Channels, between the islands which lie in this harbour, it flows near tide and half tide; that is the flood continues to run up near three hours after it is high-water by the Shore, and the ebb continues to run down three hours after it is flood by the shore. It is only in these channels and a few other places near the shores, that the motion of the Water or Tide is perceivable so that I can only guess at the quarter from which the flood comes. In the road of Anamocka it sets wsw and the Ebb the contrary; but it falls into the harbour of Tongatabu from the nw, passes through the two narrow channels on each side of [Hoolaiva]¹ where it runs with considerable rapidity, and then spends it self in the Lagoon; the Ebb returns the same way and runs with rather greater force. This nw Tide is met at the entrance of the Lagoon by one from the East, but this, as I have before observed was found to be very inconsiderable.

- 000
Thurs. 17 At 8 o'clock in the evening of the 17th the body of Eaoowe bore NEN distant 3 or 4 leagues. The Wind was at East and blew a fresh gale, with it I stood to the South till half an hour past Six o'clock
- Frid. 18 the next Morning when a sudden squal from the same direction took the Ship aback, and before the sails could be trimmed on the other tack the Main sail and the two topgallant sails were much
- Sat. 19 torn. The Wind kept between the sw and se the 19th and 20th after-
- Sun. 20 wards it veered to East, NE and North. The night between the 20th
- Mon. 21 and 21st an Eclipse of the Moon was observed as follows, being then in the Latitude of 22°56' s.

Beginning by	{	Mr King at	..	0 32 50	} App ^t time AM
		Mr Bligh	..	33 25	
		Self	..	33 35	

mean Longit. 186°57'

¹ i.e. Nukunuku.

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[April

000 the evening to N in mod^t breezes. The weather close^a and cloudy with some heavy showers about noon but at night pretty clear. A moderate sea. Steer'd wsw & swbw. Saw some Tropic Birds and fishes.

114 SUNDAY 27. Lat. DR 20.32 S. Long. DR 185.36 E. Therm. 75½:75½:
132 76½:76½:76:75½. The wind SE and SSE till near noon & afterwards
[13] about E. Moderate breezes and gentler in the afternoon, but the
[13] evening increas'd again a little. The weather fine with a smooth sea.
114 Steer'd wsw till noon and then w½N, but at seven in the evening the
Discovery bore down and hal'd us as they thought they saw Land
bearing wbn, when we haul'd our wind to the Sward. At half
past ten we tack'd and stood to the Nward. Cleand and smoak'd
below.

132 MONDAY 28. Long. TK 185.27½ E? Therm. 77½:79½:79½:78:76½:77½.
[13] The wind nbw and N. Moderate breezes and at night rather gentler.
[13] The weather fine in the forenoon but afterwards duller, and in the
evening a great deal of Thunder and lightning chiefly to the sw which
114 was follow'd by some rain. A smooth sea. At three in the morning
we stood to the westward close haul'd, and though we expected to see
the Land at daylight it was not discovered before nine o'clock, when
the Discovery made the Signal & we soon after saw it from the mast
114 head. It soon appear'd from the deck as three small islands almost a
133 head¹ and at noon we were within about five miles of the southernmost,
which as well as the others seem'd to be two miles in length and
somewhat higher than Te rouggemou A'tooa but lower than Watecoo
[13] and Savage island. We could plainly see they were coverd with trees,
amongst which were some Cocoa nuts, and they had white sandy
beaches but the sea broke to some distance off each end of that we
were nearest. At the same time we could see [sic] several more islands
just appearing, some to windward some a-head & three or four on the
lee bow.² They appear'd much like the others when we got nearer, but
some rather higher & one right a head made in two hummocks but
about four in the afternoon in three, at which time the Island
Annamocka³ was plainly seen beyond it which seem'd to be three

^a The heat has been less severe for two days past which may be probably owing to the frequent rains we have had. Whether it may be the variable and rainy season hereabouts I cannot determine, but if so it proves these are not consequences of extensive lands, for the islands in this sea are mere points and can have little effect in producing changes of wind or weather.

¹ These were the three most southern islands of the 'Otu Tolu group, called (from south to north) Telekitonga, Telekiha'apai, and Telekivava'u. *Teleki* means 'on the way to'.

² These were the islands of the Nomuka group: the main ones to windward and ahead were Mango, Nomuka Iki and Nomuka; to leeward were Kelelesia and Tonumeca.

³ Nomuka.

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ARRIVAL AT TONGA

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times the size of the largest we had yet seen. The islands almost incircled us now and we tack'd standing to the NE, but at five stood back again, soon after which two Canoes one with four & the other with three men paddled towards us and came along side without the least hesitation. They brought some Cocoa nuts, Bread fruit, plantanes and sugar cane which they gave in exchange for small nails and knives. One of the Indians came on board and when they left us another Canoe came but did not stay long as night was approaching, for the nearest island was five or six miles off which was that with three hummocks, and sufficiently shows the hazard these people would run to possess a few of our triffling articles. We sounded at this time and had 40 fathom but soon after only 17, on which we made the signal for the Discovery to anchor which we did about six o'clock in a bottom of coarse Coral sand with bits of shells.

TUESDAY 29. Therm. $75\frac{1}{2}$: $76\frac{1}{2}$: $80\frac{1}{2}$: 79 : 78 : $76\frac{1}{2}$. The wind about N except part of the forenoon when it chang'd suddenly and came from WSW with a great deal of heavy rain. The rest of the day moderate breezes with the weather dull or cloudy and a sultry air. About five in the morning we sent two boats to the nearest island which lay in our way and was that mention'd last night, that they might purchase vegetables and meet us as we came up to it. Soon after we weigh'd and stood towards it but made several tacks as the wind was foul, in which time six or seven canoes came from different islands and brought bread fruit, plantanes and yams which they exchange'd as yesterday evening. They also brought several fowls, a great many shaddocks, and an old man who had been on board last night made the Captain a present of a pretty large hog. Besides these they also exchange'd pieces of cloth, fish hooks, small baskets, musical reeds and some clubs, spears and bows, as well as some large wood Pigeons, small rails¹ and large violet colour'd Coots.² They retreated when the rain was violent, about which time one of our boats return'd with a considerable quantity of bread fruit, yams, plantanes and some grass for the cattle. The other return'd soon after noon with more vegetables, some fowls and seven young hogs, so that altogether we had procur'd as much bread fruit and other Vegetables as serv'd our people to day, which with an addition brought by several more Canoes in the afternoon also enabled us to spare some to the Discovery and reserve enough to ourselves for another day. Our people were very civilly treated by the Indians at the island, who sold them the bread fruit for a bead each and the hogs for a small hatchet

¹ *Globicephala pacifica*.² The Spotless Crake, *Porzana tabuensis*.³ *Porphyrio melanotus*.

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609 apiece, but bunches of plantanes or fowls were purchas'd for
 499 middling siz'd nails. The inhabitants were not numerous and their
 huts which were collected together and stood within a plantane walk
 361 but indifferent: not far from them there was a pretty large pond of
 312 fresh water, which was tolerable though not equal to what we com-
 monly meet with in streams, of which there was not the least
 114 appearance. Between two and three in the afternoon we pass'd this
 133 island, the higher parts of which are not wooded and seem to be
 [137] uncultivated, but it has notwithstanding a pleasant appearance. We
 pass'd near a reef or shoal that lyes to the sw of it and in the evening
 were abreast of Annamocka, but being three or four miles to lee-
 ward kept turning up as we had no soundings with less than 40
 fathom which made it inconveni[en]t to anchor. The bottom was
 rocky & we had sometimes 55 fathom but at eleven at night 50 with
 the same sort of ground.

132 WEDNESDAY 30th. Long. TK 184.41 E. The wind from ENE to N and
 nbw. Moderate breezes and sometimes gentle or almost calm. The
 weather dull with a great deal of rain early in the morning and some
 114 in the afternoon. A swell from the sw. Before day light we continued
 to make short boards and when that appear'd were nearly in the
 same place as last night, but soon after as there was but little wind we
 [137] fell more to leeward. When the breeze sprung up we stood in and at
 eleven in the forenoon were near the shore of Annamocka cete¹ or
 little Annamocka, off which lye some shoals on which a high surf
 broke. We afterwards made several tacks and as the wind became
 more favourable in the afternoon we lay up for the anchoring place
 at Annamocka, but it failing us in the evening we anchor'd in 42
 fathom coral sand and shells about two miles off shore at the wnw
 114 part of the island. In the forenoon we saw two islands to the NW^{ward}
 133 which are those call'd Kaybay and Mattasôa² in Abel Tasman's plate
 [103] of Annamocka, where they are represented too small. The one is a
 single mountain of a Conic figure which has a noble appearance, and
 the other is pretty long and flat on the top though much higher than
 any of the neighbouring isles (except that just mention'd) or indeed
 499 of any we had yet seen between the tropics. All the day we had
 several canoes, sometimes near twenty, about the ship from whom we
 purchas'd a great quantity of vegetables and about a dozen small
 hogs and pigs besides many fowls. Our trade was brisker today as

* Their names as told us by the natives are 'Kâô and To'fooa. [Kao and Tofua.]

² Nomuka Iki.

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some orders were issued out by the Captain to prohibit every person from purchasing any thing but provisions, and also appointed proper people for that purpose. While working up towards the island in the day we had from 41 to 49 fathom with a bottom of broken shells and black sand. 499 114 133

[MAY 1777]

THURSDAY MAY 1st. The wind ~~ESE~~ ESE. Moderate breezes with dull cloudy weather and some showers of rain. Early in the morning the Master was sent in the Cutter to examine the ~~SE~~ part¹ of the island and in the forenoon returned with an account of there being good anchoring and landing, but there was no water near except a small stagnant Pool and a few holes dug in the sand which had both a very indifferent sort. In the mean time we had weighed and work'd close in shore, but determin'd now to reach the anchoring place which Captⁿ Cook had occupy'd when at this island in 1774, which though at a small distance took us till four in the afternoon before we got up, which was occasion'd by a tide or current that seem'd to set right off shore. We anchor'd in fathom a sandy bottom not a mile from the shore on the NW part of the Island. Soon after day light several Canoes came off and at one time we had near forty about the ship, besides two large sailing Canoes that carry'd between forty and fifty men each. We purchas'd a great quantity of vegetables and in particular had more bread fruit than we could use, and several hogs & fowls in the same manner as on the preceding days, but were oblig'd to punish one of our people who already infring'd the articles made to regulate our bartering. There were several women in the Canoes that came off to day who were perhaps incited by curiosity to visit us, though at the same time they barter'd as eagerly as the men and us'd the paddle with equal labour and dexterity. The Discovery anchor'd a little before us though once far to leeward. 132 114 609 501 499 [562] [609] 114

FRIDAY MAY 2^d. The wind E or Ebs with cloudy weather and some showers of rain. In the morning we hoisted out the Launch and other boats and in the forenoon the Captain went on shore and agreed with the natives for the use of a hut or shed to serve as a tent and also for procuring water. In the afternoon the horses were sent on shore and at the same time a party of marines under the command of Mr King, who kept guard in the shade for the protection of the horses and waterers. To strengthen our party some were sent from the Discovery, and a signal agreed on between that ship and those on shore 132 648

¹ Cook says 'to Sound the SW side'.

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648 in case any disturbance should happen with the natives, because she
lay quite abreast of the S^omost sandy beach whereas we were rather
609 to leeward of it. There was however little reason to expect such an
685 accident as they behav'd in the most civil manner to us (if we except
439 their attempting to thief every thing) and many came off and
barterd hogs and Vegetables, though not in such numbers as when
standing off and on, as their attention was much taken up to day
with our boats going so frequently on shore.

192 SATURDAY MAY 3^d. The wind N . Mod^t breezes. The weather fine
with some showers in the afternoon. Our people employ'd watering &
648 another party in cutting wood, both which the chief who is nam'd
439 Taipa agreed to. Many of the natives traded at the ship and on shore
exchanging their fruits for nails & beads as before. They also asisted
in rolling down our water casks but they seem'd to understand Trade
so perfectly that they would not do or give the smallest trifle unless
they were paid.

114 SUNDAY 4th. The wind w. Moderate breezes with fine weather. The
people employed in wooding and watering and a party in cutting
grass for the Cattle. The indians continue to Barter their fruits but
[439] very few hogs are now brought, though several Canoes have come
[193] from the other islands. The Discovery lost her small bower anchor not
from any wind or sea but the foul ground which is probably coral
rock.

[132] MONDAY MAY 5th. The wind westerly. Gentle breezes with fine
[97] weather. The people employ'd as before, but several of the party who
[114] were wooding sufferd greatly from the juice of the trees which they
cut down, as it is so acrid that when they wip'd their face with their
hands it inflam'd their Eyes so as to make them incapable of working
& had the same effect on some other parts. They erroneously sup-
pos'd it to be Manchineel for it is a species of Pepper and grows
plentifully every where towards the shore. The trees are of no great
size & the twigs when broke distill a great quantity of a milky juice.
[824] It is calld Fait'anoo¹ by the natives & may easily be known by trying
if it has the milky juice or from its rounded leaves almost like a ² tree.

114 The Discovery found her anchor again, but her misfortune made
us examine one of our Cables which we found unhurt. The Gunner
439 was employ'd as usual in bartering on shore for provisions & pur-
chas'd a good many Yams and several hogs which came from some of
642 the other isles. We found that though Taipa or Kaipa was the person

¹ Feta'anu, *Excocarpus agallocha*. It is common in Tonga in thickets near the sea.
² 'Manchineel' was presumably the word that slipped Anderson's pen.

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who acted chiefly on the part of the Indians, he is not chief of the island but another person nam'd Toobou. We plainly saw the smoke rising from Toofôa which is a volcano but it was constantly varying in quantity and seem'd to proceed from near the middle of the island.

TUESDAY MAY 6th. The wind SSE. Gentle breezes with fine weather. The people employ'd in looking at the other Cable and steadying the ship from swinging in shore with another anchor. The rest employ'd as usual. Few Canoes off to day but trade was carried on as before on shore.

The Captⁿ brought off a person nam'd Fee'nou who says he is chief of the Island Tonga'taboo or Amsterdam. We found he arriv'd yesterday and was probably sent to as soon as we arriv'd, for his consequence seems much greater than that of any person here as they pay him the greatest respect, and many as a mark of submission bow their head and touch the sole of his foot with it afterwards, doing the same with each hand, first with the palm and then the back part. He is a tall man about 30 but rather thin, and has more of the European features than any we have yet seen here. The Captain presented him with a gown of printed linnen and some other things to engage him in our interest which he was well pleas'd with.

WEDNESDAY MAY 7th. The wind SSE. Moderate breezes with fine weather. The people employ'd as usual and the Indians continue to trade though not so briskly as formerly. The Discovery on heaving short to shift her birth into better ground lost her best Bower anchor and had near fallen on board of our ship, as they got foul of our Cable in bringing her up, but afterwards got clear and anchor'd a quarter of a mile or more to the westward of where we lay & rather farther in.

THURSDAY 8th. The Thermometer at noon . The Barometer . The wind .

FRIDAY MAY 9th. The wind E^{ly}. Fresh breezes with fine weather. An Indian of some consequence who was with Fee'nou stole ¹ on board for which he was severely flogg'd, then had his hands tied firmly behind and was carry'd to the place where we traded on shore but not releas'd till a large hog was brought for his ransom. I am far from thinking there was any injustice in punishing this man for the theft, as it cannot be determin'd what might be the consequence if such practices had been permitted, but that he should be confin'd in a painfull posture for some hours after, or a ransom demanded after proper punishment for the crime had been

¹ According to Cook, he stole 'the bolt belonging to y^e Spun yarn wench'.

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648 inflicted I believe will scarcely be found consonant with the principles of justice or humanity upon the strictest scrutiny.

114 SATURDAY MAY 10th. The wind from E to NNE. Fresh breezes with
[132] cloudy weather and a considerable swell so that no Indians came off
[439] today, but they continued to trade on shore and amongst other things
we bought a hawks bill turtle of about 30 Lb weight.

[132] SUNDAY 11th. The wind SSE. Fresh gales with cloudy weather before
noon and some rain, thunder and lightning in the morning but after-
wards clearer and more moderate. No Canoes came off the weather
was so bad. In the forenoon we got off the horses and in the evening
the other things with the party of Marines, three of whom were
punish'd on shore for negligence. On heaving in the best Bower the
service was found broke and the Cable a little damag'd.

[132] MONDAY 12th. The wind SSE. Fresh breezes with pretty clear weather.
We should have left the Island but waited for the Discovery who has
attempted to recover her anchor yesterday and today, but in vain as
[439] it got hold of a rock and the weather has been bad. Few Indians came
off as they seem to have exhausted the greatest part of their stock for
trade.

[132] TUESDAY 13th. The wind from SE to E. Moderate breezes in the fore-
noon and afterwards almost calm. The weather fine. The Discovery
[533] after a good deal of trouble recover'd her anchor. Few of the natives
[535] came off but at night we could hear them engag'd in singing and
dancing on shore as if a great number had been collected together.

[132] WEDNESDAY 14th. The wind SSE and S. Gentle breezes with very fine
weather. Between seven and eight in the morning we weigh'd and
648 left Anamocka or as the natives pronounce it Anna'mooka. This
island (as well as Amsterdam & several of the adjacent ones) was
discover'd by Abel Tasman in 1643, who considering the time he
staid has given a tolerable account of it. Its situation is in 20.14 S
131 Latitude, 185.30 E Longitude, and is about four leagues or more in
circuit being nearly of a figure. It is somewhat higher
193 than the other small isles that surround it but may nevertheless be
rank'd amongst the low islands.* The shore at that part where we lay

* As the different heights of land may easily be misunderstood from the deficiency of terms we use in expressing their various degrees I shall endeavour to explain what I mean by low & other lands. By low land I mean that which is about the height of the English coast about Essex, or what is a general criterion, that on which the trees where there are any appear above water as you approach it before the body of the land is so apparent as to determine its extent. When I say land is of a moderate height I mean that it is as high as the English coast about the Downs of Kent & Sussex, or indeed of the whole southern coast as far as Plymouth. I know no part of the English coast to the E or S^ward to which I

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DESCRIPTION OF NOMUKA

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is of a steep rugged coral rock nine or ten feet high, except the two sandy beaches already mentioned, which have a reef of rock extended from across their entrance to the shore and defends them from the sea. They make excellent harbours for boats but it is difficult to get in at low water, though at that time it is easy landing on the rocky shore without if the weather is moderate. On the *se* side which the Master examin'd is a fine sandy beach with good anchoring & landing, but it is expos'd to the *ese* wind which blows almost constantly and sometimes pretty fresh, from whence it can scarcely be preferable to our anchoring place, the best part of which seems just to the *W*ward of the largest sandy beach, as appear'd from the Discovery lying foul by being a little the other way. In the centre of the isle is a large Salt lake about a mile & a half across, round which the land rises like a bank with a gradual ascent; but we could not see any communication it has with the sea, though from the low land that runs across to it from the largest sandy Beach and the sandy soil it would appear it may have once communicated that way. There is another lake or pond, but much smaller, a little way from the shore on the left hand of the sandy beach from which we took our water, and though brackish may if taken up after rain (a great deal of which luckily happened just before our arrival) answer the purposes of a ship sufficiently. The soil on the rising parts of the island & especially towards the sea is of a reddish clayey disposition or a black loose mould, but there is no other water than the pool already mentioned, except in some small holes dug by the natives near the last which afford much better water than the pool itself.

It is very well cultivated except in a few places, and there are some others which appear to lye waste but are only left to recover the strength exhausted by constant culture, for we have seen them frequently breaking in these spots to plant again. The plantations consist chiefly of Yams and plantanes, many of which are very extensive and often inclos'd with neat fences of reed dispos'd obliquely across each other about six feet high. Within these are frequently seen other fences of less compass which surround the houses of the principal people, but for the most part these are found

can compare high land, and shall therefore say that it is the next in degree whether with respect to the whole body of land being high or its being interspers'd with high hills. Very high or mountainous land cannot be easily comprehended in a single definition, but may be understood by its always exceeding the other & adding some particular description of its height.

It should be observ'd that the criterion of low land mention'd above can hardly be applied to Annamooka and some of the isles about it, but I have considered them as low merely to avoid confusion, as they cannot be admitted to the rank of those of a moderate height which we have yet seen, as Watecoo & Mang'ya.

A [of Nomuka--Analyst]

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245 in the open plantane fields. The bread fruit and Cocoa nut trees are
 417 interspers'd with little order though chiefly near their habitations,
 244 and the other parts of the island, especially towards the sea and about
 the sides of the lake are coverd with trees and bushes of a most
 luxuriant growth, the last place having a great many mangroves &
 the first a vast number of the Fait'anoo trees already mentioned.
 133 There seems to be no rock or stones of any kind about the island that
 is not coral, except in one place to the right of the sandy beach which
 is the highest part of it, where there is a rock twenty or thirty feet
 high of a calcareous stone of a yellowish colour and a very close hard
 texture, but even about this place are large pieces of the same coral
 rock that composes the shore.

648 We liv'd on the most friendly terms with the natives while we
 609 remain'd here, and obtain'd a much larger supply of refreshment
 489 'an could have been expected from so small a place, but it should be
 342 consider'd that all the small islands around it furnish'd their Quota,
 and the strangers that brought their hogs and other things were
 oblig'd to live in temporary huts which they erected or lay them-
 136 selves down behind bushes or ferns. Besides walking frequently in the
 country, which we were permitted to do without any interruption,
 we sometimes amus'd ourselves in shooting wild ducks not unlike the
 Widgeon¹ which are very numerous upon the salt lake and the other
 648 pool. In these excursions we found the people had often deserted their
 609 houses to come down to the trading place without entertaining any
 439 suspicion that strangers rambling about would take away or destroy
 161 any thing about them, but though in these cases it might be suppos'd
 162 a great part of the inhabitants were sometimes collected at the beach
 it was impossible to form any true computation of their numbers, as
 the continual resort of strangers from other places mixing with them
 might easily mislead one. However as there was never to appearance
 above a thousand seen at one time it would perhaps be sufficient to
 allow double that number for the whole island.

114 We steer'd about NNW towards Káó and Toofóá in our way to
 634 Hapace,² an island which Fee'nou said was of a considerable extent,
 648 where we could be supply'd plentifully with every refreshment in the
 easiest manner. He engag'd to go to this place with us himself and
 133 seem'd to have some interest in it, for he express'd a good deal of
 114 aversion to the Captains intention of going to Amsterdam which he
 mention'd to him. Although they made us understand that Hapace
 lay rather to the NE of Anna'mooka, we were oblig'd to take this route
 because there is a cluster of islands lying between Annamooka &

¹ *Anas superciliosa*.² Ha'apai.

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TO HA'APAI

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Too'foá, which is the farthest we could see to the NWthward, that are seemingly encumbered with reefs and shoals and perhaps do not afford a passage for large ships as the Indians seem'd to hint. Several Canoes follow'd us a considerable way to trade and one man who was on board stole an iron Crow which was perceiv'd by some of our people, but he immediately got into a Canoe and went off. Feenou sent & recover'd this but as it was suspected he had stole something else, two or three muskets were fired at the Boat he was in though none of them hit, and after that a four pounder which had no better success.

The chief left us before dinner and went in a large sailing Canoe which had brought him from Amsterdam towards some of the islands mention'd above, which we were now almost a-breast of. The names of these as they lye in order beginning with the S^omost were told us by the natives and are as follows, though perhaps their true situation differ'd from the apparent one we now had in view.¹

- Fo'nooc,fooa [Fonoifua]
- Fonooa,eeka [Fonuaika]
- + O'ooa ['O'uka]
- + Noogoo'laice [Nukulai]
- Looa'nammo [Luanamo]
- Fo'ooa [Foua]
- + Fotooháá [Fotuha'a]
- + Ha'faiva [Ha'afeva]
- + Toong'ooa [Tungua]
- + 'Kecto [Kito]
- + 'Kotoo [Kotu]
- Foonoo'cia [unknown]
- Lootoo'aigee [Lutueki, a flat-topped rock]
- Fatoo,man'ogee [Fatumanongi, a flat-topped rock]
- + Káo — The high Conic isle [Kao]
- + Toofóá — The flat Volcano isle [Tofua]

These islands lye scatterd at unequal distances and are in general nearly as high as Annamooka, but only from two or three miles to half a mile long & some scarcely so much. They have either steep rocky shores like Annamooka or reddish cliffs, but some have sandy beaches extending almost their whole length. They are entirely cloath'd with trees amongst which are many Cocoa palms, and each forms a prospect like a beautifull garden plac'd in the sea, to heighten which the serene weather we now had contributed very much & the

¹ To save a series of footnotes, I give the present forms of the names of these islands in the text in square brackets. With the exception of the two last and of Fotuha'a they all belong to the Lulunga or Kotu group. The three exceptions belong to the Ha'apai group.

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133 whole might supply the imagination with an idea of some fairy land
 131 realiz'd. It would appear that some of these places may be form'd after
 [131] the manner we have suppos'd of Palmerstons Island, as there is one
 which as yet is entirely sand and another that has only one bush or
 tree. Indeed the appearance of Annamooka in general argues also
 such a mode of formation, did not its height persuade us that the sea
 has either made a very sudden recess or that it has begun to do so at a
 period so remote as scarcely to coincide with the date of the Creation.

114 At five in the evening we had reach'd Kotoo the most N^westerly
 133 of the low islands, a little beyond which is a shoal or reef on which the
 sea breaks all around. On passing it we were about two leagues from
 Toofoa, the smoke of which we had seen several times in the day
 131 though it had now almost ceas'd. This island is about ten leagues NNW
 162 from Anna'mooka and though according to the natives but thinly
 312 inhabited has good water. They call the Volcano upon it Kolloo'feea¹
 133 and say it is an O'tooa or divinity, about which they seem to have
 some superstitious notions. They say it sometimes throws up very
 823 large stones and compare the Crater to the size of a small islet, which
 103 has never ceas'd smoaking in their memory nor have they any
 176 tradition that it ever did. We now hauld our wind and stood ESE
 towards the islands already mention'd which form here almost a
 semicircle. At six were about two miles from the shore of one of the
 114 largest call'd Ma'toogoo,² when we sounded and had ground with 55
 fathom a fine black sandy bottom, and soon after nearly the same
 water with a coarser white sand. We then tack'd and stood back
 having for half an hour between 50 and 60 fathom, when we brought
 to with the main-topsail to the mast for some time & afterwards stood
 196 on to the westward. A great many Egg birds and flying fish were seen
 [196] in the passage to day, and it was observ'd that after sailing in the
 morning a tide or current from the westward set us much over
 towards the islands on the right.

132 THURSDAY 15th. Therm. 72½:73:74½:77:75:74½. Light airs of wind
 from the Sward and frequently quite calm with very fine weather.
 114 The sea perfectly smooth. Between twelve and one in the morning we
 tack'd and stood eastward keeping close haul'd to pass to the South-
 133 ward of Fotoohaa which is the Island next Kaó. At day light were
 [103] not far from the last place, which is a vast rock of a conic figure with
 [103] marks on its sides as if made by torrents rushing down. After passing

¹ The name of the volcano is Lofia. *Ke* is the nominative article. Lofia seems also to have
 been the name of the 'atus or god who dwelt within the crater, throwing up fire and smoke

² Matuku.

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THE HA'APAI GROUP

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Fotoo'hââ¹ we steered NE and sometimes more northerly but made little progress, so that it was about five in the evening till we reach'd two shoals² that lye to the eastward of Nee'neeva,³ the next island to Fotoo'hââ and scarcely more than two leagues from it. We then tack'd and stood again to the westward when we had soundings with fifty three and forty seven fathom in a coral sandy bottom, though not long before we had no ground with seventy fathom about four leagues east from Kâô.

We saw several more Islands to the eastward today and some land whose extent could not be well determin'd, which we suppos'd to be the Island we were directed to by Feenou. Several Canoes came from the different islands near us to barter their fruit, and Fee'nou who had been at one of them all night came accompanied by two more large Canoes and brought two hogs, some plantanes and Cocoa nuts as a present to the Captain but return'd in the evening. In the night we could plainly see flames issuing from Toofôâ though to no great height, and in the day though it smoak'd considerably at other times it almost ceas'd.

FRIDAY 16th. Lat. DR 19.42 s. Therm. 73 $\frac{1}{2}$:75:78 $\frac{1}{2}$:78:75:74. The wind varying between SSE and SE. Gentle breezes with fine serene weather and temperate. The sea quite smooth. In the night we made short boards just to keep our station but at day light stood a close hauld, when we saw the land discovered from the mast head yesterday afternoon, bearing Ebs, and could judge it to be low from the trees only appearing above the water. About nine we could see it plainly, forming three Islands nearly of an equal size, and soon after a fourth to the southward of these as large as the others. Each seem'd to be about six or seven miles long, and of the same height and appearance, lying in a bending direction from North to south. The northermost of these is call'd Hâ'ano,⁴ the next Fôâ,⁴ the third Lai'fooga⁶ and the southermost Hoo'laiva,⁶ but are all included in the general name Ha'pae by the natives. There is likewise a small isle to the Eward of Hoo'laiva call'd Ta'taffa,⁷ one lying to the westward of Ha'ano call'd Loo'hoggo,⁸ and another between Ha'ano and Fôâ but farther on to the eastward call'd Noogoo'nammo.⁹ About ten o'clock we pass'd to the southward of two other islands, the first call'd Mang'onne¹⁰

¹ in passing between these shoals and Fotoo'hââ we sounded but had no ground with seventy fathom.

¹ Fotuha'a.² Foa.³ Tatafa.⁴ Mo'unga'one.⁵ Niniva.⁶ Lifuka.⁷ Luahoko.⁸ Ha'ano.⁹ Uoleva.¹⁰ Nukunamu.

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131 the second Offo'lange,¹ between which is a rock nam'd Bouhee,² and
 103 at eleven had got up to Loo'hoggo. We then tack'd and stood to the
 Soward but in the afternoon to the eastward, and at seven in the
 evening were within a league of the shore of Ha'ano, but stood off
 again as we had no soundings with less than 56 fathom. Before dark
 some more land was supposed to be seen to the NEward, which was
 probably an Island mention'd to us by the natives who call it
 Va'vaoo³ and say it is much larger than Ha'pae.

634 A good many Canoes came from the different isles who brought a
 609 few hogs, fowls and fruit, and Fee'nou follow'd us again to day with a
 431 present of two more hogs, some Cocoa nuts &c but in the afternoon
 went forward to Hapae.

132 SATURDAY 17th. The wind ESE. Moderate breezes with fine weather
 though sometimes a little cloudy. A smooth sea. Lat^d at noon 19.46.08
 114 p. ob. In the night we stood off and on and in the morning were close
 133 in with Foa, which we saw was join'd to Ha'ano by a reef running
 even with the surface of the sea from one to the other. In the mean
 time the Master was sent in the cutter to sound between several
 small shoals that lye a little way off shore, and before eight she made
 the signal for having found anchorage, upon which we stood on and
 soon after came to abreast of the reef which joins Lai'fooga to Foa (in
 the same manner as the last place is joind to Ha'ano) though rather
 over towards the N end of Lai'fooga in twenty four fathom about a
 mile from the shore. The bottom was a fine sand and when moor'd
 one extreme of Hapae bore the other the S end of
 Foa the north end of Lai'fooga and the island

609 Loo'hoggo off Ha'ano.⁴ Immediately after anchoring many Canoes
 434 came off and in a short time there was above a hundred about the
 two ships with those that were constantly going to and coming from
 the shore. They brought off fruits and several hogs which they
 bartered in the same manner as the people at Annamooka, and indeed
 we found that many of them had been at that place while we lay there.

114 The Captain went on shore at the N part of Lai'fooga a little to the
 right of where the ship lay and found the landing place very con-
 634 venient except at low water, when the Boats cannot get close in for a
 flat that runs some way off and is dry at that time. We found that the
 people here paid rather still more respect to Feenou than at Anna-
 mooka, and no person seem'd to have equal authority to him as they
 seem'd to do what ever he directed with the greatest readiness.

¹ Ofolanga, the northernmost of the Ha'apai group.² Fuh: it is inside the Ofolanga reef.³ Vava'u.⁴ Cook is more precise about the position, p. 103 above.

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Most of the people had left their habitations to go where the ships lay, and our guide, to show perhaps that he deriv'd his authority from a person superior to any of them, often went into their huts, examin'd what was in them & made no scruple to take what he wanted or throw the things down without. He also often stopt people that were carrying things to barter & took dress'd yams or cocoa nuts to eat, nay at one time took some fish from a poor old woman who was going to dress them and was probably her subsistence for the day, but after carrying them a little way he gave them to a person that was following us.

133 The island is not above seven miles long and in some places not more than two or three broad. The east side, which is expos'd to the trade wind, has a reef running to a considerable breadth from it on which the sea breaks with great violence. It is a continuation of this reef that joins it to Foa, which is not above half a mile from it, and is partly dry at low water so that the natives can walk from one island to the other. The shore itself is either a coral rock six or seven feet high or a sandy beach, but higher than the west side, which in general is not more than three or four feet above the level of the sea. This side forms a bending or sort of bay with a fine sandy beach its whole length, defended by several shoals without, but as the entrance in is difficult from shoals perhaps the spot where the ships lay is more convenient. We found very few people in this excursion as most of them were at the Ships.

132 TUESDAY 20th. The wind Easterly. Gentle breezes with fine weather. In the forenoon the Captain to gratify the curiosity of the inhabitants order'd a party of marines on shore with some from the Discovery to show them the method of using our fire arms. They seem'd well pleas'd with the firing and various motions which were made, though our soldiers were by no means examples of the best discipline. In their turn they exhibited a dance and excersiz'd their clubs, in which it was acknowledg'd by all they far outdid our people in exactness and dexterity.

177 In the evening we entertain'd them with fire works, which luckily happen'd to be in excellent order, at which they express'd much satisfaction and a good deal of astonishment; especially at some water rockets which were admirable and gave us who had never seen any as much pleasure as the Indians could possibly receive. They compar'd the sparkles which fell from the sky rockets to falling stars, and were surpriz'd at the height of the smoke that remain'd after they were spent for they suppos'd it absolutely remain'd and became a cloud.

When we had finish'd they treated us in their turn with several

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114] which is the small isle next to it, that we might go in a direct course for Anna'mooka and found it safe as far as he went.

311 On a report of the Indians that Hoolaiva though almost as large as Lai'fooga was neither inhabited nor cultivated I went on shore to see it, and found their account true, for there is neither the least mark of culture or habitation upon it except one hut where a person resides to catch fish and Turtle. It is rather uncommon that it should be in this situation when that next to it is so perfectly cultivated and the inhabitants can walk from one to the other at low water, for though the soil is quite sandy and there is not good water upon it why might not the Cocoa palms, an article so usefull here (and which thrive in the midst of sand), be planted or indeed other articles, for it produces all the trees and plants found in a natural state on the other islands with the greatest vigour. The east side has a reef like Lai'fooga from whence we could see no island except Ta'taffa, and the west side has a bending at the N part where there seems good anchorage. We found 223 surrounding trees with an arbour upon it for catching Pigeons.

193 Three large sailing Canoes with people who seem'd strangers has 643 come to the ship, in one of which was a person nam'd Futta'faihe¹ or Poulaho who said he was chief of Amsterdam & all the islands we had seen or heard of. On mentioning that Feenou had pass'd as such [634] with us, he said that he was indeed a person of power in Amsterdam and often sent on warlike expeditions to the other isles but deny'd his being first in rank. If weight of body could give weight in rank or 643 power Poulaho was certainly the most eminent man in that respect 142 we had seen, for though not very tall he was of a monstrous size with fat which render'd him very unwieldy and almost shapeless. He had [644] straight hair and his features differ'd a good deal from the bulk of the [576] people; but these differences would not have been sufficient to convince us of his superior rank had we not seen some marks of respect paid him to which we were strangers, for on giving him something to eat two of his attendants fed him and the rest turn'd their backs while 643 he was eating. He made the Captain a present of a hog or two and a quantity of red feathers which he had heard we esteem'd, and in [648] return he had a piece of printed linnen and some other things. In the [431] evening he went on shore to Lai'fooga, and to show th^t his corpulence [501] had not render'd him wholly inactive he took a large paddle with which they scull in the fore part of the boat and handled it dexterously enough, but he soon tir'd of the exercise. The Captain went on [177] shore after him and found that all the people on shore brought in the [439]

¹ Fatafehi.

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642 relation of his, who is superior in rank to himself but has little power.
[644] He is about forty and seems a sensible man from the many shrewd
[648] questions he ask'd, amongst which was the reason of our coming
[644] amongst the isles &c. He already left off exacting that sort of homage
[576] as feeding him and turning their backs to him while he ate, which
[177] was done perhaps only to show us his consequence, but neither of the
two that was with him would eat or drink in his presence though one
of them is his brother nam'd Futta'faihe. He seem'd to be the most
unprejudic'd person imaginable, eating any thing dress'd in our way
and drinking wine with as much indifference as if us'd to it daily.

132 THURSDAY 29. Gentle breezes of wind from the Eastward in the
morning with cloudy weather but in the afternoon the wind ssw and
s. Mod^t breezes with cloudy weather. Some swell from the eastward.

114 Between seven and eight in the morning we weigh'd and steer'd
wnw, as we were not sure that the passage found by the boats
continued to Anna'mooka where we intended to touch. At first we
made little progress and pass'd at a distance from Longa'hoo and
Kakka'watta,¹ two islands next to Hoo'laiva (to the westward of
which last place and off its s part are some shoals), leaving them on
the left and afterwards pass'd between Lo'fango and Mong'onne as
we had done on coming to Ha'pae. We had also on the left two small
Islands call'd Ongoo, goo'boole² & Mai'amma,³ off which lyes several
shoals, but when the wind shifted we haul'd close up and at night
were abreast of Nee'neeva standing on towards Fotoo'hää.

648 Poulaho follow'd us and came on board but in the afternoon went
648 on shore to Lo'fango. Three more large Canoes follow'd us in one of
[491] which came Too'bou, a person of some consequence at Amsterdam,
[644] who made a present of a hog with some other things and staid on
board, as well as Futtafaihe and six or seven of Poulahos attendants.

132 FRIDAY 30th. The wind sse. Fresh breezes with cloudy weather and
some small rain in the morning. Before day light we made short boards
114 and with great difficulty kept clear of some reefs near Nee'neeva,
which could not be seen till quite near them as it was very dark, so
that at one time we were oblig'd to fire two swivels to let the Dis-
covery know the danger. At seven in the morning were very near
[133] Fotoo'hää (between which & Nee'neeva we had been working in the
night) which is quite steep at this place and rather higher than the
other isles near it, being to appearance twenty feet or more perpen-
dicular with no soundings off it in less than fathom and seems
[133] but indifferently cultivated. The rest of the day we kept turning to
[132]

¹ Hakau'ata.

² Nukupule.

³ Meama.

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A DANGEROUS PASSAGE

[883

windward and in the evening were close in with 'Kotoo¹ (the next isle to Toofōā), which with the shoal that lyes to the NW of it and the other islands mention'd the day we left Anna'mooka form a good defence from the S^oly wind which now blew, but though we intended to anchor found no ground with less than fifty fathom close in, so that we brought to with the maintopsail to the mast at six o'clock, and also the Discovery, but afterwards stood off and on having scarcely made three leagues to windward all day. In the middle watch this morning one of our people fell from the jib-boom into the sea but luckily caught hold of a rope as the ship had not much way.

Two or three Canoes came off from the islands with some Yams and bread fruit, though it blew fresh, and the nine whom we have on board seem not to have the least apprehension of danger from being drove off by a strong wind or any other accident.

SATURDAY 31. *Lat.* Obs. 19:49:34 s. The wind SE and ESE. Fresh breezes which increas'd to a brisk gale towards night with dark cloudy weather. A moderate sea. Before day light we stood between Kotoo and the isles east from it making several tacks so that we kept nearly in our station. At day light we stood pretty close in with it, thinking there might be a passage between it and the reef which is call'd Ko'koppo² to the S^oward, but being doubtfull about it we bore away round the NW point of the reef (which extends a good way to the SE) and then haul'd our wind. We made several boards in the day but gain'd very little, as we only just made the point of the reef again in the evening, & the sea being smother here we stood in again to our last nights station and made short boards.

[JUNE 1777]

SUNDAY JUNE 1st. The wind ESE and E. Fresh breezes and some brisk squalls in the forenoon but afterwards rather more moderate. The weather dark and cloudy with a good deal of rain in the forenoon and afterwards some flying showers. Before day light we stood between Kotoo and Fotoo'hāā but our coming into this place for smooth water had like to have cost us dear, as we almost run on a shoal that lyes to the eastward of a small sandy island with a single bush call'd Pootoo Poo'tooa³ near Ha'faiva about three in the morning. As it was very dark and blowing fresh we were close upon it before it was perceiv'd so that the only method left to save the ship was to throw all a-back, which being done very quickly she wore round though then to appearance scarcely two or three times her length from the broken

¹ Kotu.² Hakau Kopau.³ Putuputua.

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114 water, and we had an opportunity time enough to warn our consort of the danger by firing three swivels.

In the fore noon we attempted to work up towards Hafaiva (which is the largest isle hereabouts) between Pootoo poo'tooa & a shoal that lyes NE from Kotoo, but making little progress and the same weather being likely to continue, we came to an anchor at noon in fifty fathom a coarse sandy bottom about a mile wbn from Pootoo poo'tooa, Fotoohaa bearing nearly NNE, Kotoo swbs, and the shoal to the NE of it SSE and SE. The Discovery also came to soon after a little to the NE of us. Several Canoes came off from Ha'faiva with Cocoa nuts & Plantanes and in the morning we sent the pinnace on shore to Kotoo with our Indian guests, who were so heartily tir'd of their short Voy[age] that they had once prepar'd themselves to swim to it. Their greatest distress was with respect to their food, for they were not fond of Pork dress'd after our manner and liv'd chiefly on Yams. In the evening we caught a large Snapper of twelve or fourteen Lib. and a Grooper of the same size.

132 MONDAY 2^d. The wind SE. Fresh breezes with cloudy weather in the forenoon, but afterwards clearer. In the forenoon the Captain went on shore to Kotoo, which is scarcely accessible to boats from the coral reefs that surround it. It is not more than a mile and a half or two mile long and not so broad. The NW end is low like the islands of Hapaee, but it rises suddenly in the middle and terminates in reddish clayey cliffs at the SE end about thirty feet high. The soil thereabouts is of the same sort as in the cliffs but in the other parts it is a loose black mould. It produces the same things as the other islands and is tolerably cultivated but is thinly inhabited. We saw Annamooka from the highest part of it and the Capt^a thought he perceiv'd a clear passage about Toong'ooa and the other isles towards that place. Our people were employ'd in cutting some grass for the cattle and we planted some Melon seeds with which the natives seem'd much pleas'd and inclos'd them with branches. On our return to the boat we met with two or three ponds of water but it was very salt, and near them was one of their burying places that was much neater than those which were seen at Hapaee.

499 Several Canoes came from the different islands to barter their cocoa nuts, plantanes &c and we observ'd that almost all of them as well as the inhabitants of Kotoo were affected with a violent cough and slight sore throat, which also made its appearance on board for two days past, perhaps from the sudden change to and continuance of the bad weather.

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TO NOMUKA

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The master was sent in the cutter to see if there was a passage between the large reef Ko'koppo and 'Kotoo but though he found it clear it was so narrow as not to be worth hazarding the working through it for all that could be gain'd. 114 133

TUESDAY 3^d. The wind SE. Fresh breezes with fine weather. The master was sent with the cutter to try and find a good passage between Poo'too pootooa and the reef to the SE of us into Ha'faiva but found it would be better to go in to the eastward of Pootoo poo'tooa, though even there it is narrow. He found good anchoring at Ha'faiva but says to the S^oward of that about Matoogoo & the other isles there are a great number of small detach'd shoals which would make it almost impossible to get to the S^oward that way, though the Captain thought he saw it clear yesterday from 'Kotoo. He sail'd round Hafaiva, landed and found it a pleasant island but the water which stood in a pond was little better than that at the other isles. We had a visit from Poulaho in the forenoon who has follow'd us closely from Hapaee and slept at one or other of the islands every night. He brought a present of bread fruit which seems all these small islands can now afford, & to be nearer us he has mov'd from Ha'faiva to Kotoo with two large Canoes since yesterday. He approv'd much of our going to Amsterdam from the time it was first mention'd, and presses Omaee who has been ashore with him these two nights to stay at Amsterdam. 132 643 648 431

WEDNESDAY 4th. The wind ESE or Ebs. Fresh breezes and sometimes brisk squalls during which it generally veer'd to EBN. The weather cloudy and sometimes showers of rain. A considerable sea. In the morning between seven and eight we weigh'd and stood up round the NW part of the reef off Kotoo and then hauld close to the S^oward. We soon came in sight of Anna'mooka and at noon were abreast of it, passing to the Eastward of a large shoal that lyes three leagues west from it. At one afternoon we tackd and then made several boards but could not fetch the island, the N part of which bore ENE five or six miles distant in the dusk of the evening and the S part of Anna-mooka'eeke SEBZ. 132 114 114 133

The Discovery could not weather the shoal which oblig'd her to make a stretch to the N^oward, by which she fell so far to leeward that we could scarcely see her in the evening. Saw several Terns, Shearwaters, and a good many flying fish in the passage. 114 136

THURSDAY 5th. The wind ESE. Strong breezes or brisk gales with dark cloudy weather. A considerable sea. Before day light we kept turning making boards of about two hours and at dawn the N part of 132 114

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TO TONGATAPU

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Poulaho to be King of Amsterdam & the other isles but seem'd to insist very much upon it, perhaps from a fear of offending the other when he should hear of his former presumption.

The inhabitants have been very busy in cultivating while we were absent for they have made several large Plantane fields in places that were waste at first. We observ'd here as well as at Kotoo a good many of the small hillocks where the Yams are planted strew'd with a little white sand, which they say are those intended for the use of the chief. The Melons which the Captⁿ sow'd here have come up but are mostly eat by small insects & some of the Pine apples left with Toobou seem to be in a thriving state.

SATURDAY 7th. The wind ENE. Fresh breezes with fine clear weather. In the forenoon Poulaho came from Kotoo and we could at once see his superiority to Feenou on meeting him, for the last plac'd himself down in the circle that sat before Poulaho as an indifferent person. He seem'd at first rather abash'd as some of us were present who had been us'd to see him as a different person, but he soon recover'd himself & both he and Poulaho went on board with the Captain. He behav'd there much as any of the others that attended Poulaho, saluting his foot with his head and hands and could not ther[e] eat nor drink before him.

A few Canoes came off to the ship but we had less trade on shore than yesterday as most of the people went away when Poulaho landed.

Some of the Indians stole three glasses belonging to the Astronomical Quadrant while M^r King was observing on the beach, but they were soon recoverd by applying to Feenou who had been very usefull to us before when things were stole both here and at Ha'pae.

SUNDAY 8th. The wind ENE and NE. Moderate breezes but at night rather gentle. The weather fine. A moderate sea. Between eight and nine in the morning we weigh'd and left Annamooka steering sbw for the island Amsterdam. The islands to the SE of Annamooka which we had on our left are first Mango'eeke, Mango, Tonoo'maia, Ko'noogoo and Falla'fa'jeea.¹ There is also a very small one off Kon'oogoo call'd Gefoo'ganna² from which runs a large shoal nam'd Ko'foonga'lillo.³ In the evening between five and six we saw two islets or rocks bearing w about four leagues, the N^ormest call'd Hoonga ha'pae and the other Hoonga'tonga.⁴ The first has only five

¹ Kelefsia.² I cannot identify this shoal.³ Kefikana, a conspicuous white rock.⁴ Hunga Ha'apai and Hunga Tonga.

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162 men living upon it according to two Indians we carry'd with us, and the other is uninhabited but both abound in sea fowl.

648 Poulaho and Feenou set out with us in different Canoes attended
634 by several others but they soon outsailed us and in the evening steer'd
643 more westerly than we.

132 MONDAY 9th. Lat. Obs. 21.04 s. The wind NE and NNE. Gentle breezes and in the forenoon almost calm. The weather very fine but hot.

114 In the morning at day light we saw Amsterdam or as the natives
103 call it Tonga'taboo though much oftener simply Tonga, and some small isles that lye off it, but we had made little progress in the night as Hoonga Ha'pae and Hoonga'Tonga were still seen astern. The isles on the left or to the E^{ward} as we steer'd sbw, reckoning from the N^{ermost} were 'Taoo, A'taa, Eoo'eegeee, Motoo'taboo, ennev, Noogoo or Fook'avee, E'ooa¹ or Middleburg appearing over the E part of Tonga and Malee'nóa² a very small one but a little to the left. There was also a shoal call'd Tanga ma'noonee to the W^{ward} of Eoo'eegeee and another call'd Tooa'onne³ lying E of Malee'nóa.

On the right or to the westward was a shole call'd Ha'kou ma'máo,⁴ lying without the first islet nam'd Atta'taa⁵ which appear'd now within the west end of Tonga. The second is Too'fagga⁶ which was a very little to the right, and within Atta'toa are two small ones, the larger or inner call'd Ho'loá⁷ and the other which is close to it Laggebai'ou.⁸ A-head there were several Islets as Vaille toá'necoo, Vaille toa'hagge⁹ and Mon'oofai,¹⁰ all small besides Fa'fää,¹¹ a little larger, and within that Makka'haa.¹²

114 The pinnacle was hoisted out and sent to sound as we had only 25
133 fathom, the extremes of Tonga at eight o'clock bearing &

. At ten we were passing over a flat of Coral rock and small patches of sand which could easily be seen with eight and ten fathom, and not long after had sometimes but six or seven. We had pass'd Maleenóa about a mile when we found the Ship touch on the rock, but without much violence as the breeze was gentle and the water

¹ The foregoing are Tau, Ata, 'Eua Iki, Motu Tapu, 'Onevai, Nuku, Fukave (these last two different islands), 'Eua.

² Malinoa.

³ These two names may exist still in local knowledge, but do not come on to the charts or into Gifford's *Tongan Place Names* (Honolulu, 1923).

⁴ Hakaumamao. The name means 'distant reef'.

⁵ Tufaka.

⁷ Polo'a.

⁶ Atata.

⁸ Alakipeau.

⁹ These two islets are now referred to as one, Velitoo; they are separated by only a few yards of water, wadeable at low tide. The two names given by Anderson may refer to their appearance: Velitoo-nifo—'Velitoo with the teeth', and Velitoo-hake—'Velitoo that rises up'. Anderson's versions of the names are borne out by the engraved chart, pl. XIX in *Voyage*, I; but Gifford, *Tongan Place Names*, p. 257, gives them as Velitoohihifo, (Western Velitoo) and Velitooahake (Eastern Velitoo).

¹⁰ Monu afe.

¹¹ Fafa.

¹² Makaha'a.

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ANCHORAGE AT TONGATAPU

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perfectly smooth, immediately after which the water deepened and shoal'd several times but again deepened with a sandy bottom, and at eleven we anchor'd in 7 fathom, the western extreme of Tonga bearing the east end, Fa'fāā sebs a mile and a half and Malce'nōā ¹¹⁴ ¹³³ ~~nz~~ above two miles distant. We found the Discovery on following us also struck and stuck fast for a little time, but could receive no hurt as the weather was so moderate. The other boats were hoisted out & a little after noon three of them with two from the Discovery were sent to sound in shore. Between four & five they made the signal for having found anchorage, when we weigh'd and stood in ssw but anchor'd again before six in 3½ fathom, one extreme of Tonga bearing the other off shore about two miles. In the afternoon we had a visit from

In the afternoon we had a visit from Poulaho and Feenou, and a few small Canoes came off & barter'd fruit & fowls, but they had been so well instructed by those from the other isles that they ask'd a very extravagant price for every article.

TUESDAY 10th. The wind s and ssw. Gentle breezes with dull cloudy weather and some rain early in the morning. Soon after daylight we weigh'd and work'd in between the island Ko'loá and a shoal lying to the westward of Makka'háa call'd Gooa'langa, where we had from to fathom within which is a smaller shoal that our boats had overlook'd last night. Both these shoals are dry at low water. We work'd on and about one in the afternoon anchor'd very near Pakáé, or Pang'ia-motoo,¹ a small island within Makkaháa, between it and the shore of Tonga in fathom fine sandy bottom. Within it are three isles nam'd Maneema, Onne'atta and Hóolaiva² all joind by a reef, the last of which is only seperated from the main by a narrow creek. These form'd a perfect defence to the eastward, and the shoals we had pass'd, which lye to the nw with Tonga to the s and westward, altogether made a harbour entirely sheltered from all winds and sea. When moord Pangiamotoo bore , a point of Tonga to the westward , and another which bounds one side of the creek of Hóolaiva . Our Consort came to an anchor soon after between us and the main about a mile from the shore. The Captain went on shore

When moord Pangiamotoo bore _____, a point of Tonga to the westward _____, and another which bounds one side of the creek of Hoo'laiva _____. Our Consort came to an anchor soon after between us and the main about a mile from the shore. The Captain went on shore _____.

The Captain went on shore after dinner to the points opposite Hoo'laiva, and a very little from it found a convenient place for pitching a tent near a good house with a large open Area before it; but few people were seen though above a hundred Canoes were about

^a Pangaimotu.

The first two of these three are Manima and 'Oncata, lying on the same reef as Makaha'a and Pangaimotu. The third must have been then called Uoleva; it is now Nukunuku.

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114 the two Ships while working in, with whom we traded for hogs, fowls
439 & vegetables only as the other articles had been prohibited by the
Captain as at Annamooka.

132 WEDNESDAY 11th. The wind SE. Moderate breezes with cloudy
weather. In the forenoon we pitch'd a tent just by the house men-
tion'd yesterday, which is almost the only one here as the country
114 near it is not at all cultivated. The horses cattle & sheep &c were
[311] afterwards sent on shore and a party of marines with their officer to
312 protect the people. We discoverd two or three ponds near the place
but they had all very bad water, though we found one on Pang'ia
motoo that had rather fresher water than any we have met with
amongst the islands, but rather dirty from the little care taken of it
by the natives.

439 A good many Canoes came off & barterd Yams, Cocoa nuts and
a few hogs but they were not near so numerous as yesterday, though
we expected a much brisker trade here than any place we had been
at from its greater extent.

132 THURSDAY 12th. The wind SE. Gentle breezes with very fine weather.
On the evening we arriv'd here the Captain brought on board a
648 person who had attach'd himself to him as a friend when he touch'd
at this island in 1773, and another who had done the same with
643 Captⁿ Furneaux, who commanded the Adventure. Amongst other
[28] things they mention'd a person nam'd Maree'wagee,¹ who they said
was of the first consequence in the place and as they were understood
superior to Poulaho, to whom he was related, but so old that he liv'd
649 in retirement and yet was held in great veneration. It excited his
curiosity so much that he proposd yesterday to Poulaho that he
648 should pay him a visit, which the other readily agreed to and offer'd
to accompany him, at the same time saying he would send previous
notice to Maree'wagee that such a visit was intended him. The
Captain accordingly set out in the pinnace this morning carrying
some things with him as a present, and Captⁿ Clarke joind him in
643 one of his own boats. We went round Makka'hää to the eastward, and
648 then turning to the SEward according to Poulahos directions row'd
up into a spacious bay whose entrance from the east side of Hóólaiva
to the opposite point seems to be about two miles, the breadth within
that three and the depth near four, but it was so full of shoals that we
found it difficult to get up with the boats. The east and west sides are
low, with some creeks running into the last farther than we could see
edgd with mangroves, but at the bottom or SE part the land rises to

¹ Macaliuaki.

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A DISAPPOINTING VISIT

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some height. We row'd to the last place and landed amongst a considerable number of people, who receiv'd us with a sort of acclamation not unlike our huzzaing, as most of them had probably never seen a European before and apparently had collected for that purpose. They immediately separated to let Poulaho pass, who took us into a small inclosure and shifted the piece of cloth he wore for a new piece neatly folded that was carried by a young man. An old woman assisted in dressing him and put a mat over his cloth, as we supposed to prevent its being dirtied when he sat down, but to our great surprize on asking where Mareewagee was he said he had gone from the place just before we arriv'd to the ship. He however desir'd us to walk with him up to a Ma'lacc (a house of public resort or perhaps worship)¹ which was near half a mile up, but when we came to a large Area before it he sat down in the path and desir'd us to walk to the house, which we did & sat down in front while the crowd that follow'd us fill'd up the rest.

After sitting a little while Omace went to enquire if he meant we should see Mareewagee, but he either not understanding him or interpreting his answer into an equivocal one we walk'd about a little and the Captain then ask'd to see his house, which he seem'd averse to though he promis'd it before; upon which suspecting we should not be able to see the person we went back to the boat, & just at our departure three men with leaves strung about their necks sat down near Poulaho and began to repeat something with a serious air which we did not stay to hear finish'd. We also met several people coming with Baskets of Yams & hogs which were sent to the boat after us, but the Captⁿ was so chagrin'd at his disappointment that he would not receive them nor a bale of cloth that was sent after us by a Canoe.

It is difficult to tell whether our disappointment was only accidental or designed by Poulaho, for on enquiring at our return to the ship no such person as Mareewagee had been there. I am however inclin'd to think it arose partly from our not understanding them perfectly, and that had we waited a sufficient time we might perhaps have seen the old man, as they mention'd some thing about a chief who would come presently when they found us determin'd to go away.

The small tent for making Astronomical observations, with that from the Discovery, were fix'd to day immediately on the point at no great distance from the other tent. A pretty brisk trade for provisions carried on with the natives, a great many of whom came off to the ship.

¹ It was not the house that was the *mala's*, but the cleared space in front of it; and the Tongan *mala's* was not a place of worship.

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ISLAND EMPLOYMENTS

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blind with a disorder of his Eyes. It is probable he precedes the other in rank as he certainly posses'd what we might call the seat of honour, sitting under the tree and fronting us as we walk'd up, while the other sat aside, and indeed it appear'd that he was rather disappointed by our addressing Mareewagee first & paying most attention to him. [643] [164]

SATURDAY 14th. The wind Southerly. Gentle breezes with fine weather. The people on shore employ'd as before & those on board mostly in the hold. The natives brought a good deal of fruit and some hogs off & a brisk trade is carried on at the tent. We had a visit from Poulaho who now lives constantly at the house or Ma'lac by the tent, I believe with an intention to superintend or see that no mischief is done by his people. The Captain made him a present of some things but neither of the other chiefs came off as they had promis'd yesterday. He entertain'd our people at night with a dance at the tent, and to the surprize of every body the unwieldy Poulaho endeavour'd to vye with others in that active amusement. [132] [114] [439] [643] [648] [535]

A Canoe went to the Buoy where our boats lay and stole an iron pin belonging to one of them, for which we confin'd one in irons who was found in the Canoe though not the principal, but the iron being return'd in the afternoon he was set at liberty. [648]

SUNDAY 15th. The wind SE. Moderate breezes with fine weather. In the forenoon some of us walk'd to the westward of the tent and found the country totally uncultivated for near two miles, though quite coverd with trees and bushes in a natural state growing with the greatest vigour. Beyond this is a pretty large plain on which are some Cocoa trees and a few small plantations that appear to have been lately made, and seemingly on ground that has never been broke in before, but it seems to preserve the same appearance still farther on. We found that several of the principal people, as Maree'wagee, Too'bou, Fee'nou & some others had erected temporary huts to live in while they remain'd here, near the path which leads through the uncultivated part immediately west of the tent. Near the creek which runs to the eastward of the tent the land is quite flat and partly overflown by the sea every tide. When that retires the surface is seen to be compos'd of coral rock with holes of a yellowish mud scatter'd up and down; and towards the edges where it is a little firmer are innumerable little holes, from which issue as many small crabs of two or three different sorts which cover the place as flies on a carcase, but are so nimble that on ones approaching they disappear in an instant and baffle even the natives to catch any of them. [132] [311] [342] [643] [634] [133] [136]

At this place is an artificial work which shows these people have [349]

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648 of people brought a good many fish which were chiefly mullet, and
 431 others carry'd small ones stuck on branches as at Mareewagees
 649 though more numerous in a kind of procession. They also brought a
 649 small Turtle and afterwards a great many more Yams, all of which
 with a piece of cloth, a mat and bit of red feathers were given as a
 648 present to the Captain by Poulaho, besides two hogs which were
 535 carry'd up and fasten'd to crown the two piles of Yams. About one
 o'clock they began the Mai or dances, the first of which was almost a
 [649] copy of the first we saw at Mareewagees house. The second was con-
 ducted by the Toobou, who also danc'd there, and had four or five
 women in it who went through the several parts with as much
 exactness as the men. Towards the end they divided to leave room
 for two men who exercis'd their clubs as mentioned in the first
 648 dances, and in the third which was the last two more did the same.
 526 The dances were succeeded by wrestling and boxing, and one man
 411 entered the lists with a sort of club made from the stem of a Cocoa
 leaf which is firm and heavy, but could not find one that would en-
 535 gage him at so rough a sport. At night we had the Bo'mai repeated,
 648 in which Poulaho himself danc'd, but neither these nor the dances in
 648 the day were so considerable or carried on with such spirit as those at
 648 Mareewagees, which proves that in this as well as other countrys
 there are private men able sometimes to give entertainments superior
 to their Kings.

132 SUNDAY 22. The wind Easterly. Fresh breezes with cloudy weather.
 114 The people unemployed. Some of our Gentlemen set out yesterday
 morning to see the interior part of the island, and after walking some
 [132] way met with a lake or Lagune which they cross'd in a Canoe, and is
 probably an arm running from the Bay mentiond before to the west-
 ward as they did not see its communication with the sea. They then
 [311] cross'd to the opposite side of the island, some parts of which they
 [609] found very well cultivated, and stay'd all night but found the in-
 habitants not very willing to supply them with provisions though
 [648] they treated them civilly in other respects. On returning back to day
 one of them had his gun unexpectedly snatch'd from him by some of
 the people that follow'd them, and another trusting a young man to
 carry his lost it by the other setting off though he had carried it many
 miles.

132 MONDAY 23. The wind from NE to NNW. Moderate breezes with dull
 114 cloudy weather, a close air and in the evening a good deal of rain. In
 the morning the cutter with the Master and the Discoverys cutter

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PREPARATIONS FOR DEPARTURE

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were sent to sound for a passage that way to Middleburg. The people employ'd as usual and the Launch in watering at Pangia-motoo. 114

TUESDAY 24. Calm in the morning and clear but afterwards light breezes from the southward and then NE with cloudy weather. The two boats return'd a little after noon and had been as far as the easternmost isles lying off Tonga. They found a narrow passage between Makkahaa and Mon'ooafai to the eastward of which it is broader and beyond the isles a clear sea to Middleburg. Few Canoes have been off these two days and many of the large sailing ones have gone to some other place or other islands. There has also been little trade carried on with the natives on shore. 132 114 [133] [439]

WEDNESDAY 25th. The wind ESE or Ebs. Moderate breezes with cloudy weather. The people employ'd in bringing off yams of which we have a great quantity on shore, wood &c. The cutter with the Discoverys and the Master were sent to sound a passage to the westward in case we should not be able to get out by the other but found the place we came in by the only accessible one and that scarcely so should it happen not to be very fine weather. Few Indians off at the ship and scarcely any on shore nor do they bring any thing to barter. They have labour'd under some apprehensions ever since the chiefs were confin'd and are now very anxious about our departure as they see us making no preparations to do it. Poulaho entertains the same notion as the other people and has had his Canoe riggd to set out for Vavaoo. He mention'd his fears to the Captain who told him that we had no intention of staying & that if he would carry him to his house in the country he would order the tent and things to be carried off at their return which made him alter his resolution of going to Va'vao and promise to go to morrow. 132 114 [439] [648] [643] [634]

In the morning about a pretty smart shock of an Earthquake was said to be felt by several of our people on shore, which did not last above three or four seconds but a tremulous motion & rumbling noise continued several seconds after. 133

THURSDAY 26. The wind ESE. Fresh breezes with cloudy weather in the forenoon but afterwards clearer. In the morning the Captain set out with Poulaho and we row'd up the bay where we had been before, in which at one place was about twelve Canoes fishing in company, with Poulahos son & successor in one of them, either for his amusement or perhaps learning a necessary part of his education. Their method of fishing was by shooting a seine upon one of the shoals and surrounding it with their Canoes, on which a man got out from each and took a net of an oblong shape fastend by each side to a slender pole of seven or eight feet long, with which every boat was 132 226 [648] [643] [644]

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THE TONGAN COUNTRYSIDE

[905

the large end against a stone fix'd in the ground for that purpose, and the other being push'd against the door serves as a strong bar, which makes it as necessary to rap here at the door as at a gate in England before you can enter an inclosure. In a great many of them there is a smaller inclosure within, this also often with a door, where the house of the principal person is immediately plac'd, and near it or very often in the outer one houses of an inferior sort for servants and dependents. There are sometimes several little places again within this that have fences and houses, but communicate freely with each other, and in most there is commonly a pretty spot of short grass, though of no regular figure, before them with sweet smelling shrubs call'd Ma'eele¹ and Hooe² planted up and down and some other trees that produce beautifull flowers. The outer inclosure has commonly such things as they often want planted in them, as Cocoa nut trees or some plantanes and bread fruit, but no considerable plantations of Plantanes or Yams.

Beyond this a mile or two we generally found the Plantations more extensive but open, and still farther on a great quantity of uncultivated land coverd with grass as high as the Knee. Our guides said if we advanc'd that way we should still find a waste uncultivated country, or as they call it Váo,³ but they probably did it only to save themselves a little fatigue, for some miles beyond this the land seem'd to rise a little higher and had a great many Cocoa trees, both signs of its being cultivated. It could also be observ'd that even in this place the soil was good, and it is probable many of the spots only lay fallow, for we saw two or three large plantane fields that had lately been broke in from such ground. It is remarkable that when on the highest part, which is at least a hundred feet above the level of the sea, we often found the same coral rock which is found at the shore, projecting above the surface in the paths; and in many places where there were large breaches with a small quantity of stinking water at the bottom, it was always in the solid coral shattered or seperated as it were by violence.

At one place we fell in with a house where they were manufacturing their cloth, which though extensive in itself is a very simple operation. They take the slender stalks (or trunks) of the paper mulberry plant, which they cultivate for that purpose and seldom grows more than six or seven feet in height or four fingers in thickness, from which they strip the bark and scrape off the outer rind with

¹ Maille, *Alysic stellata*, a shrub with fragrant long slender stems, abundant small leaves and dark red berries, much used for wreaths.

² Hoi, *Dioscorea bulbifera*, one of the yams, with small flowers in spike-like clusters.

³ Váo, land in its natural uncultivated state. Anderson is very accurate.

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249 branches considerably with large heart shap'd leaves and jointed stalks. The root is the only part us'd, which being dug up is given to the servants that attend, who breaking it in pieces scrape the dirt off with a shell or bit of stick, and each begins & chews his portion which [415] they spit into a bit of plantane leaf: and the person who is to prepare [412] it collects all these mouthfulls and puts them into a large wooden dish or bowl with three or four feet, & adds as much water as will make it of a proper strength. It is then well mixd up with the hands, and some loose stuff which mats are made of thrown on the surface, which being turn'd in intercepts the fibrous part and is wrung hard to get as much as possible out from it, when it is given to some of the bysitters who sometimes prepare a weaker sort from it for themselves by chewing it again. They then begin to distribute it in little cups made of a bit of plantane leaf tied at each end, but where the company is 276 large & respectable as our present one was the person who distributes [514] [415] it calls out to know who the servants shall carry it to, and is commonly directed by one person belonging to the chief who gives the Kava. Each person has a clean cup which they throw away as soon as it is drank, and the quantity is commonly about a quarter of a pint, though they sometimes venture on two cups if much has been made. 276 The immediate effect it produces is not perceptible on these people who use it so frequently, but on some of ours who try'd it, though so nastily prepar'd, it had the same power as spirits in making them drunk, or rather producing that kind of stupefaction in consequence of using Opium or other substances of that kind. It should be observ'd at the same time that though they have it always fresh prepar'd—and I have seen them drink it seven times before noon—it is nevertheless so disagreeable or at least seems so that the greatest part of them cannot swallow it without making wry faces and shuddering afterwards.

114 After this we set out from Mooa and meeting several Canoes in our way Poulaho call'd to them and took what fish he pleas'd. We din'd [649] on a small island call'd 'Onne'vy¹ about a league off the mouth of the [312] bay, where Poulaho said there was good water but we found as was said before that these people have very little knowledge of such a [103] valuable article for there was none of it tolerable to us. This island is quite in a natural state, being only frequented as a fishing place, and 311 has nearly the same productions as Palmerstons island with some 226 E'toa trees.

114 On returning to the ship we pass'd a curious large rock which 133 seems to have been thrown upon the reef where it stands by accident.

¹ 'Onceval.

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TROUBLESOME VILLAINS

[909

It rests upon a narrow base, the upper part projecting very considerably, and is cover'd with E Toa and Pandanus trees. At night there was a vast number of lights along shore to the westward which we suppos'd was the Indians fishing. [114] [193]

SATURDAY 28th. The morning calm but afterwards brisk breezes from WNW with fine weather till the evening, when it veer'd to the Soward with drizzling rain. The people employ'd as usual. 132

Few Canoes off and all the Indians have left the place near the tent except a few villains who are very troublesome & constantly endeavouring to commit some petty theft. They were so audacious as to throw cocoa nuts at some of our people (which however might in a great measure be imputed to their own imprudence in admitting these people to childish Libertys with them at first) and threaten them with clubs, for which we seizd three of them, tied them to trees and flogg'd them very severely, afterwards cutting a large cross in the arm of one with a knife which was certainly the least excusable part of the punishment. One of them was also fird at in the morning for some flagrant attempt of the same kind by a centinel, who certainly hit him, as he was seen to be supported by several others after crossing the small creek near the place. 648

SUNDAY 29th. The wind E. Moderate breezes with good weather. The people unemploy'd. 132

MONDAY 30th. The wind . Gentle breezes with dull close weather and some small rain the afternoon.

Two of us went along with Futta'faihe as visitors to his house which is at Mooa very near his brother Poulahos. A short time after we arriv'd they kill'd a pretty large hog which is done by repeated strokes on the head, and scrap'd the hair off very dexterously with the sharp edge of pieces of split Bamboo, taking the entrails out at a large oval hole cut in the belly by the same simple instrument. Before this they had prepar'd an oven which is a large hole dug in the earth, fill'd at the bottom with stones about the size of the fist, over which a fire is made till they are red hot. They took some of these stones wrap'd up in leaves of the bread fruit tree and fill'd the Hogs belly, stuffing in a quantity of leaves to prevent their falling out and put a plug of the same kind in the Anus. It was then put on some sticks laid across the stones in a standing posture and cover'd with a great quantity of Plantane leaves, after which they dug up the earth all round and coverd it closely up, leaving it to bake in that manner. In the mean time we walk'd about the country, but met with nothing 764

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'INASI CEREMONY

[917

perhaps to insure the succession wishes to see it done whilst alive. 651
 This seems the more probable as all the principal people we had yet 796
 seen assisted in the procession, and the solemn manner in which it is [644]
 executed appears as if they held it in a religious light, which is prob-
 ably done to secure the performance of promises which are often
 broke if made independent of any such tie. The present Natche 651
 might then be consider'd as merely ceremonial, for the small quantity 796
 of yams that we saw the first day could not be intended as a general 782
 contribution, and indeed they made us sensible they were a portion
 consecrated to the O'tōoa or divinity. But they inform'd us that in
 two months there would be one of great consequence in which not
 only the tribute of Tonga but that of Hapae, Vavaoo and all the
 other isles would be brought to the chief, and confirm'd more solemnly
 by sacrificing ten human victims from amongst the inferior sort of
 people on the occasion, an action that ought to be imputed rather to
 the rigid execution which old superstitious customs require than the
 inhumanity of these people. On enquiring the reasons of so barbarous
 a practice they only said it was a necessary part of the Natche, and [784]
 that if they omitted it the Deity would certainly destroy their King
 for his impiety—a lesson which though it teaches us the propriety of
 discharging religious duties is at the same time a strong monitor
 against admitting superstition into the religion and policy of a whole
 nation or even particular sects.

THURSDAY 10th. The wind from SSE to ESE. Moderate breezes with 132
 fine weather. About eight in the morning we got under way and
 work'd through the passage found by the Master between Makka'hāā 114
 and Mon'ooafai, which in one place is not above a quarter of a mile 133
 broad but continues narrow for a small space only. Its direction is
 about SSE and NNW, the wind at this time blowing directly in opposi-
 tion to us, but we had the advantage of a flood tide which set us fast
 through and a fine clear day which plainly discover'd the shoals on
 every side. After getting through there is a passage sufficiently broad
 between the shore of Tonga and the small islands Onne'vy &c clear
 to the eastward in which we work'd, but made little progress in the
 forenoon as the wind veer'd between SSE and ESE. About four in the
 afternoon we opened the N point of E'ōōa or Middleburg as we stood
 off, but finding no ground without stood in and about sunset anchor'd
 in forty two fathom a fine sandy bottom, less than half a mile from a
 narrow reef that runs parallel to & join'd with the shore of Tonga, the
 N point of the island bearing ENE, one to the westward of us from
 which a spit runs and Eoo'ēēgee .

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114 The Discovery intended to bring to a little to the Westward of us where her boat lay in fifty fathom, but missing the bank she drove off though they veer'd above a hundred fathom cable, and did not get up till twelve o'clock.

132 FRIDAY 11th. The wind ESE and Ebs. Moderate breezes with dull close weather. In the morning we hoisted in the boats and in the forenoon got under way, working up between Tonga and the isles without as yesterday. A reef connects all these isles together except
114 Eoo'eegee (which is the largest and most easterly) and also surrounds them, but there is no anchoring near it, for in the afternoon when about two cables length from the reef off Noogoo we had no ground with less than 62 fathom. In the evening we opened Middleburg, whose N end is a high bluff point and the rest appeared much as when the Resolution made it on the East side in 1773, so that it seems narrow, but we made so little progress today that we did not weather the NE part of Tonga till ten at night, passing between that & Eoo'eegee.

[499] We had now been a month at Tonga and six weeks more amongst the other isles, during which time we were not only plentifully supplied with hogs & vegetables but carried some of the first to sea and as many Yams as would serve the ships company near two months, besides having salted of Pork while we staid.

[648] The peaceable terms that we liv'd on with the natives while here (if we except a few trifling quarrels unavoidable in the best govern'd nations) was by no means the smallest part of the satisfaction we
[177] receiv'd from visiting this cluster of islands, (which Capt^a Cook from
[101] similar treatment call'd Friendly Isles in 1773 & 1774) and I believe few people who were unprejudic'd left them without some regret.

101 Amsterdam, Tonga or Tonga'taboo is the most considerable of these islands and the seat of government, not only all the islands that we saw being subject to it but several others that will be mention'd afterwards. It is about twenty leagues in circuit, somewhat oblong, though by much broadest at the east end and its greatest length from East to west. The South shore which I saw in 1773 is straight and consists of coral rocks eight or ten feet high terminating perpendicularly, except in some places where it is interrupted by small sandy beaches on which at low water a range of low black rocks may be seen. The W end is not more than five or six miles broad but has a shore something like the last, whereas the whole north side is inviron'd with shoals and islands and the shore within them low and sandy. The E side or end is most probably like the S, as the shore begins to

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DEPARTURE FROM TONGATAPU

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assume a rocky appearance towards the NE point though not above seven or eight feet high, and neither of these places have any shelter for ships, at least the s side which is bold on every part and has a high surf breaking on it. At the w or rather NW end is an open road,¹ where Tasman anchor'd in 1643 and Captⁿ Cook in 1773, but besides being unsheltered the ground is very foul, and Maria bay near the w end on the N side is far from being a good harbour for large ships from its shoals & difficult entrance. The place where we lay is exactly in

s Latitude,

E Longitude, and forms a

harbour every way safe and convenient with a good landing place, except just at low water when a sandy flat that runs off a little way prevents the Boats getting quite close. It is near the middle on the north side of the island, and though in the neighbourhood of perhaps the least inhabited part of it, is not less convenient as the natives will always bring supplies, and there is less danger of being pester'd by their numbers. A ship coming here ought to make the NE part of the island, and run down between the main and little isles lying off it till she has pass'd the narrow between Makka'ha and Mon'ooafai, which we went out by, and then haul up for the Harbour within Pangiamotoo supposing the wind SE^rly which is commonly the case. As the passage we came in by to the N^oward is neither safe nor easy the best method is to wait for a breeze from the W^oward or N^oward, which frequently blows, to repass the strait of Mon'ooafai, or if time will not permit to work through with a flood tide as we did, the length of the whole passage between the isles and main not exceeding four leagues.

It is what may with the greatest propriety be call'd a low island, as the trees on the west part when we lay at anchor only appear'd, and the only eminent part which can be seen from a ship is the sE point, though many gently rising and declining grounds are observable when on shore. The general appearance of the country does not afford that beautifull kind of Landscape often produc'd from a variety of hills and valleys, lawns, rivulets and cascades but at the same time it conveys to the spectator an idea of the most exuberant fertility, whether we respect the places improv'd by art or those still in a natural state, both which yield all its vegetable productions with the greatest vigour and perpetual verdure. At a distance the surface seems entirely cloath'd with trees of various sizes, some of which are very large, but above the rest the tall Cocoa palms always raise their tufted heads and are far from being the smallest ornament

¹ Van Diemen's Road.

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TONGATAPU DESCRIBED

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which causes that universal and continual spring found here. It has I believe been alledg'd by some that the vicissitude of the seasons in more boisterous regions, as being more sensible and compleat, contributes much to the happiness of their inhabitants though I think it is hard to conceive how this is effected. If there is a pleasure in the transition from extreme cold to moderate heat how can the reverse have the same effect? Do the methods we are oblig'd to take to shelter us from the weather produce any particular pleasure? or does it not rather arise after that has been accomplish'd from the thoughts of being really secur'd from its disagreeable impressions by these means? But is not the man far more happy who has that pleasure constantly secur'd to him merely from his situation, where the temperature of the climate prevents its becoming an object of his care? The superior pleasure felt at the return of our spring has been urg'd as a circumstance not to be experienc'd in countrys where there is a continual one; but not to reply that people in such countrys can at least never suffer from the want of a thing they have never known, I am doubtful whether the doctrine of objects losing their power of giving pleasure when too familiar extends to this article—at least I have never felt a wish to see the continual spring in these places blasted, to exchange the exquisite serenity of the weather when it is fine for the uncertain sunshine of perhaps half a day, or to give up the usual mildness of the mornings and evenings for the pleasure of looking at a hoar frost, or being under the necessity of sitting by a fire to procure that comfort which nature herself denies. The moon shine nights are uncommonly fine. 192

The basis of the island as far as we know is entirely a Coral rock, which is the only sort that presents itself on the shore, nor did we see the least appearance of any other stone except a few small blue pebbles strew'd about the Fya'tockas, and the smooth solid black stone something like the Lapis Lydius¹ of which the natives make their hatchets & may probably be found only in other islands, as a piece of slaty iron colour'd stone was bought at one of them which was never seen here. Though the Coral projects in many places above the surface the soil is in general of a considerable depth. In all cultivated places it is commonly of a loose black colour produc'd seemingly in a great measure from the rotten vegetables that are planted there, underneath which is very probably a clayey stratum, as a soil of that kind is often seen both on low and rising grounds but especially in several places towards the shore where it is of any 194

¹ It would be the basalt found on, for instance, Tofua. 'Lapis Lydius' is a basanite, a velvet-black quartz.

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136 sorts of flycatchers,¹ a very small swallow;² and three sorts of Pigeons one of which is Le Ramier cuivre of M. Sonnerat p. 169,³ another half the size of the common sort, of a light green on the back & wings with a red forehead,⁴ and a third somewhat less of a purple-brown but whitish underneath.⁵ Of water fowl and such as frequent the sea are the Ducks seen at Annamooka, though scarce here;⁶ blue, and white Herons,⁷ tropic Birds, common Noddys, white terns, a new species of a leaden colour with a black crest,⁸ a small blueish curlew⁹ and a large plover spotted with yellow.¹⁰ The large Bats were mentiond before besides which there is the small common sort.¹¹

The only noxious or disgusting animals of the reptile or insect tribe are sea snakes three feet long, alternately ring'd with black & white, often found on shore,¹² some Scorpions and Centipedes. There are fine green Guanoes a foot & a half long,¹³ another brown & spotted Lizard about a foot long,¹⁴ & two other small sorts. Amongst the other insects are some beautifull Moths, Butterflies, very large Spiders & others making in the whole about fifty different sorts, but the land animals fall far short of those found in the sea. Fish again are by much the smallest part of these, the variety being much less than might be expected. The most frequent sorts are mullet,¹⁵ several sorts of parrot fish,¹⁶ silver fish, old wives, some beautifully spotted soles,¹⁷ leather jackets,¹⁸ Bonneto¹⁹ and Albicores,²⁰ besides the eels mention'd at Palmerstones island, some Sharks, rays,²¹ pipe fish,²² a sort of Pike²³ and some curious devil fish.²⁴ The many reefs and shoals on the N side of the island afford shelter for an endless variety of shell fish, amongst which are many that are esteem'd precious in Europe, such as the true Hammer oyster²⁵ of which however none could be obtain'd entire, a

¹ Flycatchers are numerous, and these 'two sorts' cannot be pinned down.

² Pacific Swallow, *Hirundo tahitica*.

³ Pacific Pigeon, *Globicea pacifica*.

⁴ Many-coloured Fruit Dove, *Phainopea porousii*.

⁵ Ground Dove, *Gallicolumba stairii*.

⁶ Australian Grey Duck, *Anas superciliosa*.

⁷ The diomorphic Reef Heron, *Demigretta sacra*.

⁸ Brown-winged Tern, *Sterna anaetheta*.

⁹ Probably a Tattler, *Heteroscolus* sp. Curlews are not blueish, but brownish.

¹⁰ Pacific Golden Plover, *Charadrius fulvus*.

¹¹ The large bats were *Pteropus tonganus*; when Anderson says 'the small common sort' he evidently refers to the Tongan paka, much like the Pipistrel of England and Europe.

¹² *Laticauda colubrina* (cf. II, p. 560, n. 2), or *Hydrophis cyanocinctus*.

¹³ An Iguana, *Brachylophus fasciatus*.

¹⁴ Perhaps this was the lizard referred to by Labillardiere, II, p. 105, as *Lacerta amboinensis*, which the Tongans said was good eating.

¹⁵ *Mugil* sp.

¹⁶ Possibly either Bothidae or Soleidae.

¹⁷ *Katsuwonus palamis*.

¹⁸ Dasyatidae or Miliobatidae.

¹⁹ *Sphyrna* sp.

²⁰ *Manta* or *Mabula* sp.

²¹ Some sort of Scaridae.

²² Balistidae or Monacanthidae.

²³ Probably *Neothunnus macropterus*.

²⁴ Syngnathidae.

²⁵ *Malleus* sp.

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THE TONGAN PEOPLE

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large indentated oyster¹ & several others but none of the common sort, Panamas, Cones, a sort of the gigantic cockles found in the East Indies,^a pearl shell oysters and many others, several of which I believe have been hitherto unknown to the most scrupulous enquirers after that branch of Natural History. There are likewise several sorts of Sea Eggs and many very fine star fish, besides a considerable variety of Corals, amongst which are two red sorts, the one most elegantly branch'd, the other tubulose; and there is no less variety amongst the crabs and Cray fish which are very numerous, to which may be added several sorts of sponge and some animals as the sea hare, *Holothuræ* &c.

The natives of these islands (for what is said of Tonga may be applied to the others) seldom exceed the common stature, though we have measur'd some above six feet, but are very strong and well made especially their limbs. They are generally broad about the shoulders and though the muscular disposition of the men, which seems a consequence of much action, rather conveys a notion of strength than beauty there are several to be seen that are really handsome. Their features are very various, in so much that it is scarcely possible to fix on any general likeness to characterize them by, unless it is a fullness about the point of the nose which is very common, but on the other hand there are hundreds of truly European faces & many genuine Roman noses amongst them. Their eyes and teeth are good but the last neither so remarkably white nor well set as is often found amongst Indian nations, though to balance that few of them have any uncommon thickness about the lips, a defect as frequent as the other perfection. The women are not so much distinguish'd from the men by their features as their general form, which is for the most part destitute of that strong fleshy firmness that appears in the last. Though the features of some are so delicate as not only to be a true index of their sex but to lay claim to a considerable share of beauty and expression, the rule is by no means so general as in many other

^a These are what Dalrymple calls the Mangancy in which he says fine Pearls are found, but they seldom exceed five or six pound weight here. [The reference is to Dalrymple's 'Account of some Natural Curiosities at Sooloo', pp. 8-9, in Dalrymple's *Historical Collection* . . . (1770). Anderson has mis-spelt the name. 'Manangcy, or Keema, called *Humba* by the Chinese, is a shell-fish, generally denominated cockles by our voyagers. . . . Some of them are of an amazing magnitude; it is said on the west coast of Sumatra they have been found so large as to contain fifty gallons in the two shells. . . . These shells are scalloped; the interior part of a perfect milk white, and finely polished, but without it is rough, like a cockle-shell. . . .'] Undoubtedly Anderson writes of some moderately large species of *Tridacna*.]

¹ Perhaps one of the *Arca*la.

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439 commodity, and amongst the small articles files or rather rasps were held in high estimation. They are undoubtedly of the same origin with the inhabitants of New Zealand and the isles eastward, for though in 174 some respects they differ in many others they also agree. Their first population happened no doubt in the same manner with the other islands of this vast ocean, and indeed from the great number of these already discover'd we can hardly be at a loss to form a judgment of this manner especially if it be allow'd, which is not improbable, that they are much more numerous and at less distances from each other than is generally imagin'd. Necessity if not choice would soon force the surplus of people which must follow the population of a small isle to emigrate; and I believe a very short time would bring them to some other isle as yet uninhabited. Accident too as well as design has no doubt often had a share in peopling the different parts of the world, & this may be the case in all the places discover'd or visited in this voyage, though it might at first appear the people must be naturally the same. This is far from being the case, but we must attribute it to the different stock from which they sprung before their arrival in the south sea, or we must believe that at the creation every particular island was furnish'd with its inhabitants in the same manner as with its peculiar plants and animals.

192 SATURDAY 12. The wind E. Fresh breezes with fine Weather. After weathering the NE part of Tonga last night the wind being rather favourable we stretch'd over for E'ooa and fetch'd it about two in the morning, but kept turning till day light and at seven anchor'd in the same place where Captⁿ Cook had been in 1773, which he call'd English road, in fathom water, one extreme of the land bearing the other , one end of Tonga , and the other . The Discovery did not anchor till some time after, when she brought to a little to the S^oward and within us. Few Canoes came off [312] but in one was the Chief nam'd Ta'ooa.¹ The Captⁿ went on shore before and after dinner and found some water which was but very 439 indifferent. They also traded for some Yams and above a dozen of hogs.

As we lay at anchor this island bore a very different aspect from 193 any we had seen and forms a most beautiful landscape. It is higher than any we pass'd since leaving New Zealand (as Kaō may justly be reckon'd an immense rock) not excepting Mang'yā and Watēoo, & from its top which is almost flat declines very gently towards the 191 sea. As the other isles of this cluster are flat the eye can distinguish

¹ Ta'aua'a or 'Tioonee'.

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EXCURSION ON 'EUA

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nothing but the trees that cover them, but here the land rising gently upwards presents us with an extensive prospect, where groves of trees are only interspers'd at irregular distances in beautifull disorder and the rest coverd with grass. Near the shore again it is quite cover'd with various trees amongst which are the habitations of the natives, and to the right of our station was one of the most extensive groves of Cocoa palms I ever saw. 193 197 [361]

SUNDAY 13th. The wind E. Fresh breezes with cloudy W^r & in the evening a little rain. Brought off a Launch load of water. Traded on shore for a good number of Yams and some hogs. 192 114

In the afternoon a party of us made an excursion to the highest part of the island, which was a little to the right, and in our way pass'd a deep valley or rather chasm which is very narrow. About half way up we could see that part of the island under us extended into a large down which had several risings interspersd with small clusters of trees, but quite uncultivated, and coverd with grass about the height of the knee where numberless cattle might be fed. On the top we found a round heap of coral stones which they call'd E'tchee as that at Tonga, and seem'd to say it was a mark of Poulahos sovereignty over the island. At this place was also a spring of excellent water, and though we found Coral rock at the surface, on crossing the deep valley which is several hundred feet above the sea we saw here a soft reddish rock and some sand stone. The top of the island from this to the north point is an extended flat like that before mentioned, behind which it rises gradually; but the east side of the island, though it has a flat like the opposite one, terminates in steep craggs towards the sea and is at this place in all not above five or six miles broad. Besides the plants common on the other isles we found on the height a species of *Acrosticum*,¹ *Melastoma*² and Fern tree³ with a few other ferns and plants not common below. Amongst the rest was the Jeejee in its natural state which grows eight or ten feet high. We return'd by another road which led us through a wooded part of the country and about third way down met with a little pool of excellent water which kept running into a much larger below, but we could not follow it as the valley was rugged and the natives say it does not reach the sea unless when it rains much. We found they burnt the grass in many places but could not discover that it was intended for planting, although they have a few spots cultivated almost to the top. 439 133 [311] [349] [312] 137 487 312 311

¹ Probably this was the fern Hakato, *Acrostichum aureum*.

² *Melastoma denticulatum*, a branched spreading shrub called in Tonga Peaikuku.

³ The fern tree Longolongo, *Cyrtosperma filix-mas*, found all over Tonga, and especially common on 'Eua.

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684 On returning we were informd that a party of indians had got into the ring where our people traded, struck one of their own people with a club which lay'd bare or as others said fracturd his scull & then broke his Thigh with the same, when our men interposd and sav'd him from being killd. He had no signs of life when carried to a neighbouring house but afterwards recoverd a little, and on asking the reason of so severe a treatment we were informd that he had been discoverd in a situation rather indelicate with a woman who was Taboo'd. We however understood that she was no otherwise Taboo'd than by belonging to another person & rather superior in life to her Amoroso, so that he had not transgress'd in any mysterious point as that word seems sometimes to imply. From this circumstance we had an oppurtunity of observing how they punish infidelity, but the female sinner has by far the slightest share for her misdemeanor as they told us she would only be slightly beat, & indeed the man in such cases perhaps seldom suffers death: as though this person seemd to us to have been very roughly handled they appeard to have no suspicion of his dying from it & said he would be well in a month, so that in all probability if the transgressor in these cases can keep out of the way till the passion of the offended party has subsided, he may escape with a very slight punishment.

192 MONDAY 14th. The wind ENE or NE. Fresh breezes with dark weather
439 and in the afternoon a constant heavy rain and sultry air. Our people continued to trade on shore for a good quantity of Yams, Hogs and Fowls & some were employed to cut grass for the Cattle.

114 Some of us went several miles into the valley which runs between the upper and lower rising of the island to the Sward. We found the country tolerably cultivated, the soil on the high grounds being chiefly a red clayey substance but below black and loose, and on
311 examination it appeard that every spot of the grassy part would
134 admitt of cultivation with the greatest ease & in all likelihood yield every thing in the same abundance as those already planted.

132 TUESDAY 15th. The wind N and NNW. Fresh breezes with dull weather in the morning and then constant heavy rain till near the evening. A considerable swell set in upon the shore but the ships rode
439 easy. Continued to barter for yams & other things as yesterday.

132 WEDNESDAY 16. The morning calm and the rest of the day variable breezes or calm. A large swell setting in which broke very violently
193 on the shore, so that it was with great difficulty our boats got off at night, and it would seem that it is sometimes impossible to get out at

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MANLY AND WOMANLY SPORTS

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a break in the reef which they enter by here, and is the only place where landing is practicable. Unmoored ship in the morning. A little to the left of the landing place there is a kind of creek that runs up a little way into a large cleft chink or gully, the sides of which are formed by rugged rocks at least forty feet high, which I found upon examination to be the same as that calcareous substance^a found on the highest part of Annamooka; from whence it is probable the Basis of this Island is of that substance and perhaps the craggs to the eastward, as this, is a division directly in a solid part of it. There was two places with excellent water near the upper part which with a little trouble might be conveyed down so as to water a ship, but it seems doubtfull if there is such a quantity to be always found in these places. It was so cool in this place, which is always shelter'd from the sun, that we found several of the sorts of fern growing in New Zealand & some others here. We also found on returning by the high grounds that the rains for two days passd had washd down a kind of iron sand, like that us'd to dry up ink, upon the paths which was every where sparkling but so mixd with the common mould that no quantity could be collected.

Our people traded as yesterday and the chief Ta'oofa made the Captain a present of two pretty large piles of yams, which seemd to be collected by a kind of contribution as at the other isles. He also entertaind us with boxing and wrestling and as an Introduction several pairs of women box'd with the true spirit of female acrimony, one of the first sending off her antagonist with a bloody nose, but these matches seldom lasted long before some of their own sex rose and interposd. Whether the old observation is true that in enmity a woman is a more implacable adversary than a man, and that our present example will help to decide it I will not determine, but I am rather inclin'd to think their passion for speedy and universal conquest was the reason of our heroines engaging with such irresistible fury, as the shame of being conquer'd seemd to affect them more than the severity of the blows. At the same time we could not observe without pleasure another instance of the many we had seen before amongst the men of the great temper and even generosity they exhibit in sports which are properly their province, and ought never to engage female delicacy, for two of these after boxing a considerable time with great spirit and dexterity, and finding neither was likely to overcome, desisted suddenly and embracing kiss'd each other with

^a If this is to be considered as coral it is very different from that coarse calcareous basis from which all growing corals that spring from it seem to derive their support or rather covering, and is therefore to be reckond a distinct species or has perhaps no affinity to it.

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DEPARTURE FROM 'EUA

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suppose we would never think of applying to on such occasions. It is therefore the best method if a single person or two should wish at any time to traverse the country to apply to the chief, who will send a guide which will be a perfect security against all insults, for if a larger company chuses to undertake such peregrinations they are seldom molested. At the same time it should be observ'd that it is every persons business to avoid giving them an opportunity of offering such insults, as it not only interrupts the good understanding which ought always to be cultivated with these people, both from a principle of humanity and as a means of obtaining with ease those supplies of refreshment which are always wanted by ships that visit them, but as it also exposes themselves to real danger: For though we cannot accuse any of the natives, however bad, of an intention to destroy or even hurt the person thus insulted, yet in the scuffle which must always happen before they can secure the cloaths which is their object a man may accidentally receive an irrecoverable blow.

THURSDAY 17th. The wind E. Gentle breezes and sometimes calm with close sultry weather and a good deal of rain. The Captⁿ went on shore in the morning carrying the Indian with him whom he releas'd, and in the forenoon we weigh'd and steer'd swbs to get an offing but afterwards haul'd up sse close to the wind.

Middleburg or as the natives call it E'ooa is only leagues from Tonga, and English road in Latitude Longitude

E. The shore is every where bold, for the reef of reddish rock, almost like that at Watecoo, which lines it in some places is scarcely a hundred yards broad. The island is of figure, about

leagues in circuit, and as far as we know has no anchoring place but in English road. That as being an open road cannot be call'd a place of safety, for though it lyes on the [west] side of the island experience has not yet convinced us that the winds from that quarter never blow with a strength sufficient to force a ship from her anchors, and the short time we lay there inform'd us that even when not blowing directly upon the shore a swell may be rais'd which is both troublesome and may at times cut off all communication with the shore, as few Canoes came off to us at that time. Vegetables and hogs may be had in sufficient quantity, but water for the purposes of a ship is just as difficult to procure as at Tonga, and in other respects though a beautifull spot we found it much less convenient than that place. The anchoring ground too is not of the best sort as we found the Cable much rubb'd on heaving it up this morning. The people seem not to be in that excellent subordination we

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the Hogs or breadfruit, & tho' it was a contraband Trade it was prosecuted with the greatest Activity & Spirit in defiance of the severe Penalties with which it was loaded, & in Contempt of that Danger which attended the Prosecution of this fraudulent & lucrative Traffick. This Article was no other than red Feathers. It must be remembered that at Otaheite red Feathers are prized above anything whatsoever, they being the most valuable offering they make to their Gods & very scarce at that Island as they have no birds with red Plumage, this Circumstance was found out by our Circumnavigators last Voyage, who happening to bring a few red feathers with them from the Marqueses found what great Value the Otaheiteans set upon them, preferring them to every thing they had got. This being universally known in the two Ships it is no wonder that every one endeavoured to supply himself with a good Stock at these Islands where they are so plentiful, tho' these people get them from another Island. The Indians in a short time perceiving our eagerness after them raised the Price of them, so that at last they became so dear that it was hardly worth our while to purchase them, as the Hatchets & Shirts we gave them would fetch as much at Otaheite as the small Quantity of Feathers they gave us for them. However every one provided himself with a good Stock before we left these Islands & they turned out to very good Account at Otaheite. The Inhabitants make Caps of them & various Ornaments for their Dresses, those they sold us were pasted on Cloth, & had a very beautiful appearance.

Some of us used to go every day shooting wild Ducks, a great number of which were met with on a large Lagoon & some Ponds in the interior Part of the Island, the Indians would generally attend us & look out for them & when they were shot run into the Pond & fetch them out. Along the large lagoon which occupies a great part of the middle of ye Island are most delightful walks shaded from the Sun by the branches that meet together over head; the Country throughout is exceedingly well cultivated & has the appearance of a beautiful Garden; nothing can be more agreeable than the Inclosures in which their Houses stand, round which the bread fruit & Plantain Trees grow & extend their friendly Shade over the Natives, while they sit beneath them partaking of a delicious & wholesome Meal supplied by those trees that spread their umbrageous Leaves to defend them from the Rays of too near a Sun. Such enchanting Prospects does this little Isle afford that it may be said to realize the poetical Descriptions of the Elysian Fields in ancient Writers, it is certainly as beautiful a Spot as Imagination can paint; there are small Hills here & there to vary the prospect, tho' they rise to no

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A GREAT CHARACTER

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considerable Height & the Island may be called low upon the whole. 133
 It abounds with Bread fruit trees, Cocoa nuts, Yams, Plantains & 136
 Tarroo root & is well stocked with Hogs & Fowls. We found no great 137
 Difficulty in getting the Girls on board, for the Charms of a Hatchet, 139
 a Shirt or a long nail they could no more withstand than we could 609
 theirs which were far from being despicable. Some of these Girls 836
 were exceeding handsome, tho' it was afterwards universally allowed
 that in female softness & Delicacy they were excelled by the Ota-
 heitean Ladies.

We had been at Anamooka about a Week when there arrived 648
 from one of the neighbouring Isles a Chief whose authority was 634
 acknowledged to be superior to that of Toobow the King of the
 Island. He was taken on board the Ship by Capt Cook & treated with
 respect suitable to his Dignity, & presented with a Cotton Gown,
 Hatchets, Beads & other Things with which he was well pleased. 634
 The Name of the great Personage we found was Phenow,¹ he is about 141
 thirty years of age, not robust but tall & well made & exceedingly 142
 active & lively with a majestic Countenance & a noble and manly
 Deportment, his forehead is high, his Nose Aquiline & his Eye
 penetrating and full of fire, his Hair thick & flowing over his
 Shoulders. He seemed to be possessed of a mind intelligent, firm,
 elevated & generous; His manners were free and engaging. In his
 intercourse with us he shewed a keenness and Penetration that dis-
 tinguished him as a great Character. In a short time he became a
 Favourite with all, & tho' afterwards we met with Chiefs of higher
 rank than him he still continued to be the most popular Man among
 us while we staid at these Islands. He generally had three or four of
 his Mistresses attending him who were very handsome women. He 634
 made Capt. Cook several Presents of red Feathers, Hogs & Fruits & 648
 he spent much of his time on board the Resolution where many
 things engaged his attention, more particularly the great Guns & 177
 small arms; to gratify his Curiosity a great gun was fired with Ball 1431
 towards the Shore which was about a mile distant, another was fired
 afterwards on the other side towards the open sea. We saw them both
 light & the astonishment which they created in Phenow & the other
 Chiefs who were on board may be much easier conceived than
 described; two or three more Guns were fired, when Phenow partly
 terrified with the Explosion & perfectly satisfied with the Execution
 of them told us that he desired no more. At the same time that this
 Experiment pleased & gratified the Curiosity of the Indian Chief, it
 impressed him with a Dread of our Power, which no doubt was of use

¹ Finau. Why Samwell spells the name with 'Ph' is a mystery.

1777]

THE TONGANS

[1039

nearly like that of Otaheite & they blow into it through the Nose, but make very indifferent Music of it. The Mimia is made like the Pipe of Pan with nine fistulae tyed together of different Lengths, they draw them along the Mouth & blow into them, but I never found that they made any thing like music out of them. The Drums are made of large cylindrical Pieces of wood like a Garden roller & excavated, which must cost them much trouble to do with their Tools; a Slit just wide enough to get the Hand in is made from one end to the other & there is no hole at either end, they beat them with 2 Sticks. Other musical Instrum^{ts} if such they may be called have been already mentioned in the account of the Dances at Happai. 534

Their carving they execute very neat, this art is chiefly employed by them in ornamenting their Clubs, which they carve all over with the shape of Men, Birds, Dogs & Fish &c. in different parts, and fill up the whole with strait & spiral Lines in various directions & they sometimes inlay them with bone, as they likewise do their Stools that they use for pillows tho' they never carve them, they also carve the handles of fly flaps in the same Manner that they do their Clubs, & they have small sticks carved two of which they put between their fingers & clap together in the same manner that Children in England do with Stones. They have small Images of Men & Birds made of Bone which they sometime[s] wear about their necks as ornaments. They polish their different Manufactures of wood with a file which is made of a piece of wood covered with the Skin of the Shark. 532

The general appearance of the Island is very beautiful it being entirely covered from one end to the other with Cocoa nut, Breadfruit & other fruit trees, it is low, there being not a single Hill or any considerable rising Ground upon it; it is long & narrow being about in Length & broad. On advancing into the interior part of the Country nothing can be more pleasing than the appearance of their Houses and Plantations & of the Cocoa nut, breadfruit and Plantain Trees loaded with fruit & the large fields of Yams which are to be met with all over the Island, over which you travel along delightful Lanes between the Wicker Partition of the different inclosures, & here & there is a burying place and a large building much larger than the dwelling Houses, which seems appropriated as a public Hall for the use of a district to meet in to transact public Business or to perform their Dances, or as they were situated near the burying places they perhaps perform some Ceremonies in them at their Funerals. There were generally two or three Seats hewn in the Pillars that supported the Building which seemed to be for the reception of the Priests or Chiefs; in these Houses they 301
321
412
237
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344
311
241
164

1777]

TUBUAI

[1051

a small sized mean-looking People in comparison with the others & the women in general are not so handsome. A few of them lay on board the Ship every night. 142
609

The Island is high & of a very beautiful appearance; the Hilly part is covered with Verdure & the skirts of the Island along the Sea Shore covered with Cocoa nut, Breadfruit & other Trees; they have many Shaddocks here; the Produce of it is the same as that of Tonga-taboo. We got no water here. 133
137
241

THURSDAY JULY 17th. This forenoon we got under Sail with the wind at SE and stood to the southward, at Sunset took our Departure from Oohā bearing NE distant 2 or 3 Leagues, which was the last we saw of the Friendly Isles. We are now shaping our Course for Otaheite. 312
122

FRIDAY AUGUST 8th. Nothing remarkable happened on our Passage, till to day when in Lat. 24 s we fell in with the South east Trade and about noon discovered an Island to the Northward of us; we ran towards it till Sunset when we hauled our Wind & stood off & on during the night. 000

SATURDAY AUGUST 9th. At day light bore away for the Land, at 7 o'Clock hauled round the sw Point and soon after brought to under the lee of the Island. Sounded & had ground at 30 fathoms fine sand at the distance of about half a mile from the Reef. Several Canoes came off to the Ships but would not venture on board, but kept shouting to us at a distance. Omai understood their Language very well and spoke to them but still they were afraid of trusting themselves on board, he asked them the Name of the Island & they told him it was called Oto-boo-ee¹: As there was no prospect of a Harbour or of getting any thing here, at nine o'Clock Capt^a Cook made sail & steered again for Otaheite. This Island is between four and five miles in length, is surrounded by a reef at a good distance from the Shore, with Openings that seemed navigable for Ships, it is high uneven Land, it appeared on our first making it like two Islands, being low in the middle & high at each end; at a little distance from the East end lay three small Islands. Lat. 23°22' s, Long 210°50' E. The people seemed in their Persons like the Otaheiteans, their Canoes were quite different in Shape from those of Otaheite & were painted of various Colours.

AUGUST 12th. Early this Morning we saw Osaburgh Island & soon after came in Sight of Otaheite to the great pleasure of every one on board. Omai sat all day on the forecastle viewing his Native Shores

¹ Tubuai.

[pp. 109(-1300 not processed)]

APPENDIX III

Extracts from Officers' Journals

I. CLERKE

ACCOUNT OF TONGA, 1777

[P.R.O. Adm 55/22, ff. 86-91v]

We arriv'd at Anamooka (or Rotterdam) one of the Friendly Isles on the 2nd of May and continued among them till the 17th of July. During this Stay we found that this Group of Islands, to which with the utmost propriety is given that social Name, is infinitely more numerous and extensive than we before had any Idea of, as will be seen in the Survey by our Travels and visits among them; but our Intelligence gives them vastly more Scope yet, which I must treat of hereafter. The Food of the Inhabitants and the various produce of the Isles of Amsterdam and Rotterdam I believe were fully describ'd in our Accounts of last Voyage: I have likewise said a little upon that Subject in the course of the Log, so that I can only observe here, the account is applicable to the whole, and that they all live in the most happy and luxurious abundance. 175 101

A few days after our Anchoring here arrived a Man from Amsterdam whose name was Feenow; he immediately took upon himself the regal Authority, and every thing was done with all respect and attention by his Command: the Man who acted as his prime Minister, and who upon all Occasions acquitted himself as a clear headed Fellow and profound Statesman, in a long harangue he made told us that Feenow was Agi-lahi¹ or King of Amsterdam and all the numerous Group of Isles laying around, which he enumerated to us by their Names: I counted till he came to a hundred, when I concluded those were Isles enough in conscience for any one Man, and being almost tired of the Ministers elaborate speech, I gave over numbering, but his Excellency made many Additions to King Feenow's Territories after I had done. However be these matters as they may, Feenow was all in all here, and was most princely attended; he had a numerous train of dependants generally about him, beside half a dozen very fine young Lasses, which composed his Majesties Seraglio. 175 634

During our Stay now, we were convinc'd of the Existance of a Volcano upon Mattasoa, for it was in a continued State of Eruption: at our departure hence the last Voyage we were dubious whether the Smoke we saw about this Isle had a subterranean Origin or not. 175 133

On the 14th Instant, by the invitation and desire of Feenow, we got under way to make a visit to the Arpi² Isles, where he assur'd us of abundance of every thing that was good: the passage there is rather disagree- 175

¹ 'ahi lahi.² Ha'apai.

[1777]

CLERKE'S JOURNAL

[1313

These Isles are all a bed of Coral Rock, the Soil, tho' productive of such abundance of good things is no where deep, go where you will upon the utmost Elevations of them, you very frequently find the points of the Coral projecting themselves above the Surface of it.

TAHITI, 1777

[P.R.O. Adm 55/22, ff. 103-4v]

We arrived here in a Bay, distinguished by the Natives, by the Name of Ohitapeah, on the Morning of the 13th of August, when we met with a most cordial reception from these our old and social Acquaintance. Upon inquiring how matters stood, we found that all our Friends, were alive and well; excepting Oheatuah, the young king of this part of the Isle, (Tiaraboo) and Obereah, the former Queen of Otaheite Nuee; both of whom had been dead & buried some time since. I felt severely for the loss of this good old Lady, for she was a most benevolent Being, and a firm Friend to our cause. Our old Friends here were full of News, which they immediately set about relating to us; among other occurrences, they gave us to understand that 2 Ships had been here from Remah (undoubtedly Spaniards from Lima) who had given them some Oxen & Goats, with abundance of Hogs and Dogs; that they had built a House on Shore, and lived with y^m 2 or 3 Months. We do not yet understand enough of this Language to form a clear Idea, of what these People mean to inculcate or represent in their Discourse; we found ourselves miserably confused, in this history of the transactions of the Spaniards, which however was a good deal assisted by the various & different Accounts these People gave of them. After making the best Inquiries I cou'd, I concluded the matter to be as follows.

At the latter End of the Year 1774, a spanish Equipment of two Vessells, the one a 2 Decker (I suppose a 40 Gun Ship) the other a small Vessell, accompanying her as a Tender, arrived in this Bay, and staid here 2 or 3 Months. During this Time, the Commander of the Ships died; these People call his Name Oriddy; they have erected a Cross over his Grave, with this Inscription, Christus vincit, Carolus tertius imperat. They put up a House on shore here, which has been built wherever the Ships fitted out, & brought here in Frame; this House I believe to have been meant, as a retreat to the People they left behind, (which will be treated of hereafter) in case of a Cabal with the Natives; otherwise I cant conceive the use of it, for it is in no one particular, so pleasant or convenient, as the Habitations of the Islanders, which are always to be hired at a very easy rate.

Their deportment, during their Stay here, was quite in the Spanish Style, brim full of pomp and State, tho' among a parcel of poor Indians, who cou'd not conceive what should swell a set of fellows out, in such an unaccountable manner; but they gave them to understand, they were very great Men,—very great Men indeed; that the King of Lima, was Sovereign of the Universe, and they his Subjects, of course the most formidable in the World. Our poor Friends, here, astonished & surprized at beholding such superior Beings among them, asked if England was not a Country of

1364]

[1777]
APPENDIX III

mother; whenever we ask'd what they were, & if very superior people, they would be surpris'd at the Question, & said they were Tamaha's, a distinguishing name higher than any, but what particular meaning is in the word, we could not find out. Although from their fathers country they might not be intitled to power & Possessions, yet their superior rank may arise from that line, as they generally admit that they are oblig'd to shew signs of respect to the Feegee chiefs, by folding their hands before their face & bowing their bodies. Women in this Country enjoy equal Privileges of honour & respect with the men, for at our Observatory there were two women who had homage paid to them by the Chiefs, & to one of them Fattafaihe used to bow: I understood this woman to be his near relation, she had her husband with her, who enjoyd none of these marks of honour.

'Eua

f. 86v. [13 JULY] ... on the top of the hill is a circular place pil'd round with coral stones & one or two large ones in the middle, this place they call'd Etchee¹ & said it was built as a mark of Powlohow's sovereignty; there was an Excellent spring of fresh water close by it; we met in several places in the chasms of the rocks very good water & which might be conveyd down to where the Natives are, yet they do not appear to regard good water, as they in their houses always gave us indifferent & often very brackish water to drink. We were all delightd with the charming prospect from this hill; the Sea on the se side of the Island is but at a little distance from it & the land rises in broken hills, rugg'd & cliffy, & is not capable of much improvement, but the nw part of the Island has a fine assemblage of hills & Valleys with extensive Meadows & patches of wood, with now & then a plantation; Yet this kind of Country, which we praise so much, does not answer so well the purposes of what the Natives cultivate as the flat borders by the Sea Side, so that it is in a great measure Waste; but it struck us strongly, as the best calculatd place for Cattle of all the Islands; & we thought that to make the Landscape the most charming one imaginable, would be sheep & Cattle upon the Meadows & hills before us; We rather hop'd than firmly believ'd, that the sheep which had been given to Marrawaggee & now put on shore here would thrive, since the 2 Yews were very poor & the Ram quite young, however as there are no dogs yet in this Island & as the Natives do not much admire them, they stand a chance of being unmolest'd & from that circumstance may thrive & answer the purpose for which they are left.

DESCRIPTION OF THE FRIENDLY ISLANDS

[Adm 55/116, ff. 88v-89, 89v-90, with excisions]

In regard to their numbers I know of no criterion by which to make even a tolerable guess, the Natives followd us from one Island to another, therefore it is not possible to know the number of any one Island we visit'd; at

[1777]

KING'S JOURNAL

[1365]

the time that their entertainments were exhibit'd there might be not short of 12,000 people, who built temporary huts or slept under the trees about the tent; at the Ceremony at Moa¹ we suppose not less than 600 chiefs were assembled, but from these bodies I see no good conclusion to be drawn of the number in either all, or any one of them. From the Nature of the Country, requiring the labour & industry of the Natives for their support, it cannot be near so populous in proportion to their size as what the Society Islands are; the houses here are by no means thickly scattered about & many parts in all the Islands are uncultivat'd, owing to the Sandiness & poverty of the Soil in low Islands, & in the high ones to their elevatd & expos'd situation; besides the larger low Islands have extensive lagoons & lakes as at Tonga & Anamooka, which considerably lessens the surface, leaving therefore their population to be gatherd from the nature of the Country. We will proceed to their Colour, form, & Natural dispositions.

The Friendly Islanders are of a lively brown Colour & a shade darker than Omai. Although many of their principal women were fairer, their colour resembles that of the Mallays we saw at the Cape of Good hope; they are in general above the middle size, many very tall men & but a few under sizd, they are firmly & compactly made about the joints, broad shoulderd & Muscular, & perhaps few natives exceed them in that form, which requires both strenght & agility; this is even to be observ'd in their walking but abundantly shewn in their athletick exercises & dances: their hair I believe is universally black or a dark brown when young, but they have a method of colouring it which deceives one at first; it is not unusual to see two diff^t colours on the same head, & perhaps one purple; a sort of chalky paste which they very often daub upon their heads turns the hair a yellow sandy colour; they are still more various in their fashion of wearing it, being cut short on some parts & others left long, yet as they seem to admire fine long hair, we rather suppose that when it is even partially cut, & we know it to be the case when all short, that it is in memory of some deceas'd friend. There are but few who have beards, but shave very dextrously with 2 shells, laying one under the hair & the sharp point of the one above meeting that of the one below, cuts it close off. The Chiefs have glossy smooth skins preservd so by frequent washing; & as fresh water is scarce, they after bathing in salt water throw over them a few coco nut shells of fresh, which takes the salt which otherwise adheres to the skin, & which gives a disagreeable roughness to that of the common people, & afterwards rub over their bodies Coco nut Oile perfectly sweet & free from any disagreeable smell. There are nevertheless many cutaneous marks from disorders & from voluntary inflictions; more than half of them are affect'd with the tetter or ringworm, which leaves behind a whitish mark; boils & blotches are often met with, & inflam'd sore Eyes are frequent; few are free from marks on the Cheek bone, which they make by quick repeating strokes with the knuckles on the death of their friends or relations, besides these there are many other disfiguring marks inflict'd on the same

¹ Mu'a.

CHAPTER II

ENVIRONMENTAL AND SOCIAL CONTEXT OF TONGAN DANCE

GEOLOGY AND GEOGRAPHY

131 The Tongan archipelago, last of the Polynesian Kingdoms, lies in the South Pacific approximately between 16° and 23° south latitude and 173° and 176° west longitude, southeast of Fiji and southwest of Samoa (see map, Figure 2.1). Tonga's 269 square miles are divided among some 150 islands, many of which are uninhabited.

193 Tonga is little known to the Western world except for the geological fame of several of its volcanic islands on the Westerly long axis of the group which are part of a volcanic chain running from New Zealand to Samoa through the Kermadec Islands. Volcanic activity still occurs both above and below the surface of the sea. About midway along this line of islands lie Kao and Tofua. Kao, an extinct crater reaching a height of 3,380 feet, is one of the few examples in the world of a perfect volcanic cone. Tofua, which is flatter and still occasionally erupts, is well known because it was off the coast of Tofua that the mutiny on the Bounty took place. Fomalo'ou (Falcon Island) is well known because, due to volcanic activity and erosion, it alternates being above and below the surface of the sea.

78 To the Tongans the most important volcanic island is Niufo'ou.

[829] The disastrous eruption in 1946 is still vivid in their minds as it necessitated the evacuation of the people to Tongatapu and 'Eua.

197 Niufo'ouans are recognized as being 'different' because of their

[p. 12]

[TEXT CONTINUED ON PAGE 14]

197 'peculiar way of speaking.' The language of Muafo'ou, although it is Tongan, has a dialect status which shows grammatical relationships with Samoan. Unfortunately for the world of anthropological linguistics this dialect has never been fully studied and it is in danger of dying out, for the younger generation speaks the main dialect of Tongan and 535 only the remaining old people speak the Muafo'ou dialect. The lau 178 faka-Mua is a dance local to Muafo'ou, and it too is in danger of being forgotten.

133 This chain of volcanic islands is relatively unimportant to Tonga 182 today, but it is these very islands that are important for an understanding of the ecology which supports the Tongan social system. The main inhabited islands of the Tongan group are coral islands, which in most Pacific areas would be associated with lack of fertile soil and [194] often a subsistence level economy. In Tonga, however, the flat coral islands have reaped the harvest of the close volcanic islands and the resulting deep, rich volcanic soil has made it possible to develop an economy of surplus to maintain Tonga's highly stratified social system.

[162] The population concentration is mainly on these low-lying islands to the east of the volcanic chain. The largest of this group of limestone 194 193 islands, Tongatapu, is less than 270 feet high, but in many places has 241 a soil depth of ten feet. The soil is excellent and a very large proportion of the islands are intensely cultivated. The main food plants are yam, taro, sweet potato, banana, sugar cane, manioc,

[262] coconut, and breadfruit. In addition, fruit of the mango, orange,

TEXT CONTINUED ON PAGE 163

262 pineapple and papaya are eaten in season, and kava is widely grown.
[241] Pigs and chickens thrive and, along with fish and tinned corned beef,
[231] form the main protein in the Tongan diet.

131 Geographically and administratively the Tongan islands can be divided into three main groups (see map, Figure 2.2). Tongatapu and

[193] 'Eua in the south have by far the largest land area. The central Ha'apai group consists of small coral limestone islands. Lifuka, largest of the Ha'apai group, is 4 1/4 miles long and 1 1/2 miles at its broadest place. The Vava'u group lies 60 miles northeast of

[504] Ha'apai and consists of one large and several small islands. Neiafu harbor, Vava'u, is one of the best land-locked harbors in the South Pacific. In addition to these three main groups there are outlying islands to the north, including Niuafo'ou, Niuaotupapu, Tafahi, Toku, and Fomalei.

192 The temperature varies from the low 50°s to 90°, the humidity is usually very high, the mean being almost 80°. Annual rainfall is about 65 inches per year. There is usually a definite wet season from December to April and often a draught between October and December.

[312] Until recently all fresh water was rainwater. Tonga is subject to
[73] hurricanes and not infrequently thousands of coconut and banana trees, the basis of their cash economy, are ruined.

PEOPLE AND LANGUAGE

161 This is the geographical setting in which nearly 70,000 people play their daily social roles. The figures of the last Tongan census,

- 114 in numerous respects, are not superior to reputable eye-witness descriptions of aboriginal Tonga.¹

CONTACT AND DESCRIPTIONS

- 175 Part of the Tongan archipelago was first contacted by the Dutch navigators Schouten and Le Maire in 1616, and various contacts with Europeans followed: 1643 (Tasman), 1767 (Wallis), 1773, 1774, and 1777 (Cook), 1781 (Maurelle), 1787 (La Perouse), 1789 (Bligh), 1793 (D'Entrecasteaux and Labillardiere), and 1793 (Malaspina) (see Colson 1885; Tudor 1968: 125-127). These contacts between Europeans and Tongans lasted for periods of a few days to several weeks. The accounts of these men made Europeans aware of Tonga and placed Tonga on Europe's map. The accounts spurred Europeans to send men to proselytize the peoples of the Pacific. Tonga, along with Tahiti, was one of the first island groups to be sent European missionaries in the late eighteenth century.

797 The first missionaries were of the Missionary Society of London (form-

- 101 Tonga, named by Captain James Cook "The Friendly Islands," is composed of some 150 to 200 islands and islets with perhaps only 25 percent of those being inhabited. The islands are a form of raised limestone, or volcanic formations and limestone formations (Anonymous 1944: 16). The most recent work indicates that the total land area of the archipelago is 256.42 square miles, with the Tongatapu Group (the main island of Tongatapu with surrounding small islands but excluding the island of 'Eua) having 100.37 square miles of that total or some 39.1 percent (Maude 1965: 218). Tongatapu Island is approximately 99 square miles in area. The estimated population for the entire archipelago for December 31, 1970 was 86,055 (Tapa 1971: 4).

- 101 The territorial boundaries of the Kingdom of Tonga were proclaimed by King George Tupou I to be 15°S and 23°S and 173°W and 177°W (*Tonga Government Gazette*, 2: 55, August 24, 1887). The islands of the Kingdom thus fall within a rectangle of the South Pacific some 596 miles North-South by 264 miles East-West, with the outer islands of the Kingdom being Niua Fo'ou Island to the North at 15°34'S and 175°40'W, and 'Ata Island to the South at 22°20'S and 176°12'W. 'Ata Island is approximately 100 miles southeast of the main island of Tongatapu and Niua Fo'ou Island is approximately 232 miles northwest of the Vava'u group of Islands.

- 101 Tonga derived its name from the principal island of the group, Tongatapu Island or 'sacred' Tonga. The *tapu* was probably appended to the Tonga because this island became the residence of the leaders of the archipelago. Tongatapu Island was the focal point for the political and religious system in the archipelago prior to and after European contact. The Polynesians who settled the archipelago appear to have chosen this relatively flat island because of terrain and climate. The middle, or Ha'apai group of islands are a series of low islets. The northernmost island group of Vava'u has relatively high hills, with most of the land being at least one hundred feet above sea level (as opposed to Tongatapu Island which is no higher than two hundred feet along the southern or *liku* coast). Vava'u was, and is, subject to more destructive hurricanes than Tongatapu during the hurricane season and it was only on Tongatapu that relative permanency of Tongan culture and continuity of leadership could be maintained for generations.

THE PACIFIC IN TRANSITION

125 culture it is easier to gain an awareness of the less obvious aspects of
 121 man/land relationships when all—or a large number of—households
 from the same village are studied than when individual, widely-
 scattered households are surveyed largely in isolation from the
 community of which they form a part. Furthermore, a geographer
 is frequently interested in comparisons between areas rather than in
 data aggregated over a wide area, and village communities, each
 with its own territory, form convenient units for comparison. Con-
 sequently, while an overall random sample survey might have
 produced results with a higher degree of statistical validity when
 generalized to the whole of Tonga, this would have been at the cost
 of a lower level of understanding of some of the complexities of
 man/land relationships.

121 The main problem in a village approach is the choice of villages.
 In general, the villages studied were selected in an attempt to
 determine the effect of one or more variables on other variables in
 the system of man/land relationships; they were not chosen simply
 to represent 'typical' Tongan conditions, and therefore the data
 obtained from them cannot be used to calculate average values for
 Tonga. In Tongatapu, the four villages surveyed by means of a
 general household questionnaire were chosen to cover the major
 variations in population density and land-tenure conditions in the
 island. The form used included questions on household composition,
 land, agricultural activities and household income. In Ha'apai the
 125 [73] questions on sources of income were dropped, as a hurricane had
 largely destroyed cash cropping in the group shortly before the time
 of field research, and more specialized surveys of land holding and
 food cropping were carried out instead. No detailed surveys were
 conducted in Vava'u, partly because of the even greater destruction
 of cash cropping there, and partly because the emphasis in research
 was on areas of high population density, and in Vava'u population
 densities are mostly below the national average.

LAND RESOURCES

● 133 The three main island groups, Tongatapu, Ha'apai and Vava'u, are
 all of raised limestone formation. Tongatapu has a flat to gently
 undulating surface, with only a few small hills rising just above the
 tops of the coconut palms. The islands of Ha'apai are small, low and
 scattered, except for the outlying high volcanic peaks of Tofua and

LAND SHORTAGE AND POPULATION PRESSURE IN TONGA

- 133 Kao (not shown on the map), while Vava'u is a compact and comparatively hilly group, its surface made up of a series of terraces.
- 134 The most common soil type on all these islands is a fertile, friable soil, termed *kelefatu* by Tongans, which varies in texture from a loamy sand to a clay. Although almost always underlain by coral limestone, the main parent material of this soil is volcanic ash, which gives it a mineral fertility very much higher than is usual for soils on raised limestone islands. The other main soil type is *tou'one*, a sandy and less fertile soil found at low elevations close to the sea. Although present in all the islands of raised limestone formation it is proportionately most important in Ha'apai, where it may occupy up to half the area of some of the settled islands. It appears to be derived entirely from coral sand or limestone and decayed vegetable matter, with perhaps the addition of small amounts of volcanic ash and pumice.
- 132 Rainfall is generally sufficient for good plant growth, with the northern group, Vava'u, having a more humid climate than the islands further south. Mean annual rainfall increases from 1,700mm at Nuku'alofa (Tongatapu) to 1,780mm at Pangai (Ha'apai) and 2,180mm at Neiafu (Vava'u), while the percentage of dry months in the rainfall record, using Mohr's definition of a dry month (Mohr, 1944, 53-8), decreases from 23 per cent and 25 per cent respectively in
- 132 Tongatapu and Ha'apai to 16 per cent in Vava'u. This combination
- 133 of fertile, volcanically-derived soils, generally adequate but not
- 134 excessive rainfall, and easy topography provides good conditions for crop production throughout all the main islands of Tonga.

POPULATION DISTRIBUTION AND DENSITY

- 161 The total population of Tonga in the 1966 Census was 77,429
- 128 persons, distributed as shown in Table 7.1. In the table Tongatapu
- 162 and Vava'u have each been divided into two districts of contrasting density, and in Tongatapu an attempt has been made to obtain a realistic rural population density figure for the central and eastern district by subtracting both the population of the main town, Nuku'alofa, and the area of agricultural land surrounding the town
- 161 from the calculation. Areas of high population density are the western
- 162 tip of Tongatapu, and most of Ha'apai (where individual islands have densities ranging from 121 to 410/km²). Densities are moderate in central and eastern Tongatapu (ranging from 96 to 159/km²) and

LAND SHORTAGE AND POPULATION PRESSURE IN TONGA

explanation seems to lie in the relationship between settlement and marine resources. In the past, fishing and reef-collecting were important subsistence activities along with food cropping, although in recent years they have declined as canned meat and fish have become more easily obtainable. Settlement therefore tended to concentrate along the most productive shores; in Tongatapu, for instance, over 70 per cent of the villages are located along the low northern shore and around the lagoon, the areas considered to be the most productive in seafoods, while in Ha'apai, which has particularly extensive reefs and fishing grounds, only the very smallest islands or those without *kelefatu* soils have failed to attract settlement. Conversely, in 'Eua the surrounding reef is narrow and sometimes dangerous and the offshore waters deep and unsheltered, and until recently the island, despite its size, had only a tiny population. Population densities were therefore higher where shores and reefs were productive but the land area limited, as in western Tongatapu, Ha'apai and parts of southern and eastern Vava'u, than where productive shores were backed by extensive areas of land, as in central and eastern Tongatapu. The lowest population densities were along unproductive shores, as in 'Eua, western Vava'u and parts of the south coast of Tongatapu.

This subsistence-orientated distribution of population in the past has by now been considerably modified by internal migration, which constitutes the second broad explanation of the present population pattern. Internal migration is largely directed towards Nuku'alofa, the capital, central and eastern Tongatapu and 'Eua, and away from western Tongatapu, Ha'apai, Vava'u and Niuatoputapu. It reflects movement in search of employment, education, land for cash cropping, and the attractions of urban life and is a result of the growing regional inequalities in development and opportunities within Tonga. Further discussion of migration, however, will be left to a later section, where it is examined in the context of the response of Tongans to population pressure. The main effect of internal migration on the earlier pattern of population distribution has been to reduce the contrasts between central and eastern Tongatapu and the long standing areas of high population density, but as migration appears to be continuing at a high rate further changes in population distribution can be expected.

Having outlined the main elements of land resources and population distribution we may now turn to the question of population

[421 cont.]

000 connected the two parts of the island together, which notwithstanding its agreeable appearance, seemed to be entirely uninhabited. Captain Cook gave it the name of Hervey's Isle, in honour of the present earl of Bristol. A bird which resembled a sand-piper in its flight, and [422] note, had appeared about the ship, the day before we made this island, and might be said to have announced its proximity, but though we observed another of the same sort on the 26th, which actually settled in the rigging, yet we did not fall in with another island. We held a westerly course from Hervey's Isle, which lies in 19° 18' south latitude and 158° 54' west longitude from Greenwich, till the first of October, when we saw land before us about two o'clock in the afternoon. In four hours time we came within two or three leagues of 133 it, and found it of a moderate height; the hills were covered with 175 trees, and offered a pleasing, though not magnificent prospect. At the southwest extremity we observed a small rocky islet, and to the 175 northward a low land of greater extent. From thence we judged, that [10] the isle before us was the same which Abel Janssen Tasman named Middleburg Isle, in 1643, and that the other to the north, was that of Amsterdam, discovered by the same navigator. We lay to all night, and with day-break [October 2] passed round the S.W. point of Middleburg 175 Isle, and ranged its western coast. There appeared to be some low land 245 at the bottom of the hills, which contained plantations of fine young 137 bananas, whose vivid green leaves contrasted admirably with the different tints of various shrubberies, and with the brown colour of 175 the coco palms, which seemed to be the effect of winter. [423] The light was still so faint, that we distinguished several fires glimmering in the bushes, but by degrees we likewise discerned people 1 [Sic! -- Analyst]

[423 cont.]

175 running along the shore. The hills which were low, and not so high

175 above the level of the sea as the Isle of Wight, were agreeably

133 adorned with small clumps of trees scattered at some distance, and

137 the intermediate ground appeared covered with herbage, like many

175 parts of England. It was not long before we perceived some of the

609 inhabitants busied in launching several canoes, and paddling

175 towards us. We threw a rope into one of these canoes which ran up

609 close to us, and one of the three people in her came on board, and

431 presented a root of the intoxicating pepper-tree of the South Sea

20 Islands, touched our noses with his like the New Zealanders, in

sign of friendship, and then sat down on the deck without speaking

a word. The captain presented him with a nail, upon which he

immediately held it over his own head, and pronounced fagafetai,

175 which was probably an expression of thanksgiving. He was naked

291 to the waist, but from thence to the knees he had a piece of cloth

wrapped about him, which seemed to be manufactured much like that of

Taheitee, but was covered with a brown colour, and a strong glue,

175 which made it stiff and fit to resist the wet. His stature was

142 middle-sized, and his lineaments were mild and tolerably regular.

175 His colour was much like that [424] of the common Taheitiens (9),

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302
[28] 9. As I shall frequently mention the inhabitants of
Taheitee, and of the Society Islands, in comparison
with other islanders, it will be proper to observe,
that since the natives both of Taheitee and of the
Society Islands, are perfectly alike in most respects,
I shall indifferently call a custom Taheitian, or
usual at the Society Islands, which is common to them
both. Therefore, unless I expressly put these terms
in contradistinction to each other, I wish to have them
understood in general as synonymous.

that is, of a clear mahogany or chesnut brown; his beard was cut

short or shaven, and his hair was black, in short frizzled curls,
burnt as it were at the tips,

[425 cont.]

175
609 hesitation, and one of these seemed to be a chief, or a man of some
565 quality, and was accordingly treated with a number of presents,
(431)
[201] which he severally laid on his head, when he received them, saying
fagafetai every time. Our English cloth and linen he admired most,
and iron wares in the next degree. His behaviour was very free and
unconcerned; for he went down into the cabin, and wherever^A we
175 thought fit to conduct him. He likewise told us, upon our enquiry,
101 that the island near which we lay at anchor, (the same which
124 Tasman called Middleburg) was called Ea-Oowhe among his country-men;
and that the [426] other to the north (or Tasman's Amsterdam island)
bore the name of Tonga-Tabboo. We consulted several of the natives,
in order to have greater certainty on this point, and always
received the same names in answer.

175 After breakfast, the captains went on shore with us and the
123 chief, who had continued on board all that time. A bed of coral
175 rocks surrounded the coast, towards the landing-place; but many
123 canoes occupied the deep channels between these rocks, and a great
609 number of inhabitants in them as well as on the shore, shouted for
[133] joy at our approach. The canoes immediately came along side the boat,
[431]
[431] and the natives threw great bales of cloth into it, without asking
for any thing in return; while many of both sexes swam about perfectly
naked, holding up some trifles, such as rings of tortoise-shell,
fish-hooks of mother of pearl, and the like, for sale. As soon as
we could make way through the throng of canoes, we approached as
near as possible to the shore, and were carried to it out of our boat,

175 for which the natives very readily offered their backs. The people
609 thronged about us with every expression of friendship, and offered
431^A [sic—Analyst.]

[445]

175
[565] As soon as the captains had delivered their present, they returned to the ships, and the chief came on board with us. Our anchor was weighed, our sails were spread to the wind, and we forsook this happy island when we had scarce discovered its beauties.

[439]
[565]
[609] The chief, after selling a number of fish-hooks for nails and beads, hailed one of the canoes which were passing by, and left us with looks which spoke his friendly, open disposition.

[101]
[133] We now sailed along the western shore of Tasman's Amsterdam island, which the natives called Tonga-Tabboo, and found it a very low flat land, compared with that which we had left. The middle of this island is nearly in 21° 11' S. latitude, and 175° W. longitude.

[133] Its highest elevation above the level of the sea, appeared to the eye never to exceed six or seven yards perpendicular. On the other hand, its extent was much more considerable than that of Ea-oowhe, and by the help of our spying-glasses, we discovered the same regular plantations which we had so much admired there, and saw the shores crowded with inhabitants, who gazed at us, probably with as much attention as we bestowed upon them. When we were about half way between both islands, or nearly three leagues from each, we were met by several canoes full of men, who attempted to come along-side, but as we happened to be too far to windward, they could only fetch the Adventure, where they came on board.

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[133] [446] In the afternoon we approached the northernmost end of the island, and perceived some small isles connected by reefs to the eastward. Their situation and that of the shoal to the north-west, where the sea broke with great violence, convinced us that we were now arrived at the very place where Tasman anchored in 1643,

[446 cont.]

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and which he called Van Diemen's Road. Here we dropped an anchor upon a rocky bank, and were immediately surrounded with numbers of the natives, some in canoes, and some swimming, though we lay

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about a quarter of a mile from the shore. We found them to be of the same nation which inhabited Ea-ooowe, and their mercantile turn prompted them to bring an immense quantity of their cloth, mats, nets, utensils, arms, and ornaments, which they eagerly exchanged for beads and nails. The ships were no sooner moored, than a prohibition was made against purchasing curiosities, and the natives were told to bring coco-nuts, bread-fruit, yams, and bananas, as well as hogs and fowls, of which we had already learnt the names. We purchased a small quantity of provisions the same evening, to give an example to the rest of the inhabitants, who were obliged to take their merchandize on shore again. The good effects of this step appeared the next morning, when the natives returned from shore at day-break,

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and had loaded their canoes with vegetables and fowls. Many of them came on board as freely as if we had been old acquaintances,

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and did not [447] appear to have the least idea of distrust. One of them, a well made man, with a handsome open countenance, seemed to have some authority among them, like the chief whom we had seen

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on Ea-ooowe. He descended into the cabin, acquainted us that his name was Attahha, and received several presents, among which he sat a high value on iron, and on red European broad cloth. After

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breakfast he went on shore with us in the pinnace. A coral reef surrounded the coast, at the distance of a musket-shot, and a single narrow pass admitted us within it, where we found the water so full of rocks and so shallow, that we were obliged to be carried out of the boat.

[447 cont.]

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[439]

out of the boat. A party of the marines were posted on the beach in case of danger, to protect the captain's clerk, who traded for provisions. The natives did not express either surprize or dislike at this proceeding, perhaps because they were unacquainted with its

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meaning. They received us with acclamations of joy as at Ea-oo-we, and desired us to sit down with them on the rocks along shore, which consisted of coral, and were covered with shell sand. We purchased several beautiful parroquets, pigeons, and doves, which they brought to us perfectly tame; and our young Borabora-man Mahine (or Hedeedee) traded with great eagerness for ornaments made of bright red feathers, which he assured us had an extraordinary value at Taheitee

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and the Society Islands. Here they were commonly pasted to aprons used in their dances, and made of the fibres of [448] coco-nut, or fixed upon banana leaves, forming rhomboidal frontlets or diadems, &c.

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With a degree of extasy which gave the greatest weight to his assertion, he shewed us that a little piece of feathered-work, as broad as two or three fingers, would purchase the largest hog in his island..

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Both this youth and O-Mai were much pleased with the inhabitants of these islands, and began to understand their language tolerably well.

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[137]

We left the beach after the first acquaintance with the natives, and ascended a few feet into a wild forest consisting of tall trees, intermixed with shrubberies. This wood though narrow, being in many places not above one hundred yards wide, was continued along the shore of Van Diemen's Road, being more or less open in various parts. Beyond it the whole island was perfectly level. We walked across a piece of uncultivated land, about five hundred yards wide, which adjoined to the wood. Part of it appeared to have been planted

[448 cont.]

175 Part of it appeared to have been planted
311 with yams, but the rest was full of grass, and had a little swamp
244 in the middle, where the purple water-hen, of poule sultane,
133 resided in great numbers. As soon as we left this, we entered into
136 a lane about six feet wide, between two fences of reed, which
487 enclosed extensive plantations on each side. Here we met many of
417 the natives, who were traveling to the beach with loads of
609 provisions, and courteously bowed their heads as they passed by us
201 in sign of friendship, generally pronouncing some monosyllable or

175 [449] other, which seemed to correspond to the Tahitian tayo. The
351 enclosures, plantations, and houses were exactly in the same style
184 as at Ea-owhe, and the people had never failed to plant odoriferous
175 shrubs round their dwellings. The mulberry, of which the bark is
137 manufactured into cloth, and the bread-tree, were more scarce than
at the Society Isles, and the apple of those islands was entirely
unknown, but the shaddock well supplied its place. The season of
spring, which revived the face of all nature, adorning every plant
with blossoms, and inspiring with joyful songs the feathered
tribe, doubtless contributed in a great measure to make every object

175 pleasing in our eyes. But the industry and elegance of the natives,
311 which they displayed in planting every piece of ground to the greatest
181 advantage, as well as in the neatness and regularity of all their
works, demanded our admiration, whilst it gave us room to suppose,
that they enjoyed a considerable degree of happiness.

175 One of the lanes between the enclosures led us to a little grove,
137 which we admired for its irregularity. An immense casuarina tree
136 far out-topped the rest, and its branches were loaded with a vast
number of blackish creatures, which we took for crows at a distance,

[452 cont.]

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764 surrounded with the finest groves. That which I have here described,
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126 was drawn by Mr. Hodges, and an exact representation of it is inserted
in captain Cook's own account of this voyage.

175 We continued our walk through the plantations, and met with
123 very few inhabitants, they being almost all gone towards the trading-
175 place. Those we saw passed by us, or continued their occupations
123 without stopping on our account. Neither curiosity, nor distrust
609 and jealousy excited them to prohibit our farther progress; on the
contrary, they always spoke in a kind tone to us, which sufficiently
175 characterized their disposition. We looked into many of the houses
351 and found them empty, but always laid out with mats, and delightfully
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352 situated among odoriferous shrubs. Sometimes they were separated
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[417] from the plantations by a little fence, through which a door, like
those of Ea-oo-we, gave admittance, which could be shut on the inside.

In that case only the area, which this fence enclosed around the
hut, was planted with the odoriferous grove, which is so much in

175 request with the natives. A walk of three [453] miles brought us to
133 the eastern shore of the island, where it forms a deep angle, which
Tasman called Maria Bay. Where we fell in with it, the ground sloped
imperceptibly into a sandy beach; but as we walked along towards the
north point, we found it rose perpendicularly, and in some places
it was excavated and overhanging. It consisted, however, entirely
of coral, which is a strong proof of some great change on our globe,
as this rock can only be formed under water. Whether it was left
bare by a gradual diminution of the sea, or perhaps by a more violent
revolution which our earth may formerly have suffered, I shall not
venture to determine. So much, however, may be assumed as a certainty,

[453 cont.]

175 that if we suppose a gradual diminution of the sea, at the rate
133 which they pretend to have observed in Sweden (14), the emersion of

14. See the Memoirs of the Swedish Academy of Sciences
at Stockholm.

this island must be of so modern date, that it is matter of astonish-
ment how it came to be covered with soil, herbage, and forests; so
well stocked with inhabitants, and so regularly adorned as we really

175 found it. We picked up a quantity of shells at the foot of the steep
126 rock, where we sometimes waded in water to the knees upon a reef, on

175 account of the flood tide which was advancing. We likewise met with
439 several natives returning from the trading-place, who sold us a
[288] number of fish-hooks and ornaments, a fish-net made like our casting-

nets, knit of very firm though slender threads, some [454] mats and
[292] pieces of cloth. We likewise purchased of them an apron, consisting
[531] of many wheels or stars of plaited coco-nut fibres, about three or
[288] four inches in diameter, cohering together by the projecting points,
and ornamented with small red feathers and beads cut out of shells.

175 Finding that the water encreased too fast upon us, we looked out
123 for an ascent to the top of the rock, and having with some difficulty
241 found one, we re-entered the plantations, where we observed the weeds

175 rooted out with great care and laid in heaps to dry. After a long
123 walk, during which we missed our way, and engaged one of the natives
to become our guide, we entered a long narrow lane between two fences,
which led us directly to the Fayetoooa or burying-place we had left
before. Here we found captains Cook and Furneaux, and Mr. Hodges,

[565] with a great number of natives, seated on the fine lawn. They were
in conversation with an old blear-eyed man, who had a good deal of
weight among the rest of the people, and was always accompanied

[479 cont.]

000 smile as he conversed with Attagha. Among the croud, we observed
175 a single man, who differed from all the rest, by having suffered
302 his hair to grow, and having twisted it into several round bunches,
184 which hung wildly about his ears. This man, and the young girl
mentioned page 468^A were the only persons we met with, who had
[480] not conformed to the general custom of cutting off the hair.

175 After a short conversation with the natives, of whom we bought
439 a variety of their tools, on account of their elegant carving, we
returned on board to breakfast, and immediately after weighed the
175 anchors and set sail. The provisions lying in confused heaps on
the decks, prevented our going into the open sea immediately. We
therefore kept standing off and on, under shelter of this island,
and did not take our departure till towards evening, when we shaped
our course southerly.

The next morning [October 8], the weather being nearly calm,
we caught a shark, eight feet long, consequently bigger than any
175 we had seen before. In the afternoon we saw the little isle which
101 Tasman calls Pylstaerts Island. This name refers to the birds,
175 which the Dutch navigators observed there, and which in all proba-
136 bility were tropic birds. Pylstaert literally signifying arrow-tail,
alludes to the two long feathers in the tail of this bird, from whence

175 its French name of paille-en-queue is likewise derived (26). Its

131 26. See Mr. Dalrymple's Collection, vol. II. p 75.
where they are called wild ducks.

175 latitude is 22° 26' S. and its longitude 170° 59' W. A contrary S.
W. wind which sprung up towards evening, obliged us to cruize about
till the 10th in the morning, when we came [481] in sight of this

[133] little islet again. It is of a moderate height, and has two hummocks,

^A [See p. 55 of HRAF manuscript—Analyst.]

[481 cont.]

175
133 of which the southernmost is the highest. We recovered the trade-
000 wind by degrees, so that we were out of sight of this island about
two o'clock in the afternoon, and having bid adieu to the tropical
islands of this ocean, directed our course a second time towards
New Zealand. We had now made such good use of the four months, after
our departure from thence, as to have crossed the South Sea in the
middle latitudes, in the depth of winter, examined a space of more
than forty degrees of longitude between the tropics, and refreshed
our people at Taheitee, the Society Islands, and the Friendly Islands
during one and thirty days. The season for prosecuting our discoveries
in high southern latitudes advanced, and the savage rocks of New
Zeeland were only to give us shelter, whilst we changed our fair-
weather rigging, for such as might resist the storms and rigours
of more inhospitable climates.

[167 cont.]

000 and their civilization little advanced, since they are savage, and
[171] go naked. Their island seems to be about three leagues long, and
[175] was called Savage Island. It is situated in 19° 1' S. and 169° 37' W.

Having reached the ship, the boats were hoisted in, and the next morning we continued our course to the westward. A large high-finned whale, which was seen near the ship, spouted up the water, and several birds and fish attended us as usual.

122 On the twenty-fourth [June 24, 1774] at night we lay to, as
[171] we expected to be very near A Namoka, or Rotterdam Island, one of the
[175] Friendly Isles discovered by Tasman in 1643. Breakers [168] were
heard a head at two o'clock, and the land appeared at day-break.

122 We stood for it, and soon found it to consist of several low islands,
193 connected by a vast reef. Another great reef lay to the northward,
175 and we passed between them. At noon a canoe came off towards us,

609 though the nearest land was above a league distant. We discerned
175 two men in it, who stood on a long while, but at last, seeing that the
181 ship gained upon them, they put about and returned. We could not
175 help admiring the difference between this race, and the savages
whom we had so lately left, and agreed that the name Friendly was

122 very justly given to them. The wind slackened all the afternoon, and
died away to a perfect calm during night. We approached so near
one of the reefs by this means that we ran great risk of being wrecked;
but a breeze springing up in the morning, we were out of danger in a
short time.

The next morning [June 26] we sailed between reefs and small
193 islands, which made the water smooth. The islands had a little more
197 elevation than the common coral islands; they were covered with groves
175

[168 cont.]

133 and tufts of trees, which gave them a most enchanting appearance.
 137 The houses were seen in great numbers among the trees on the beach,
 175 and the islands had an air of happiness and affluence. One of these
 364 little gardens rose at its east end into a white perpendicular cliff,
 181 with something like horizontal strata. At our distance it looked
 175 like the bastion of a ruined fort, and being fringed [169] with
 137 woods and palms, formed altogether a romantic view. Towards noon
 175 the wind slackened, and canoes put off from different islands to visit
 609 us, though they were above a league distant. Some of them worked so
 175 hard, that they were near us in less than an hour; and when they were
 about to musket-shot off, they began to call to us from time to time,
 still continuing to paddle towards us. Three persons were in the
 canoe, exactly like the natives of Ea-oowhe and Tonga-Tabboo, whom
 499 we had seen in October, 1773. When they were along side, a few beads
 175 and nails were presented to them, for which they immediately sent a
 824 bunch of bananas, and some delicious shaddocks (citrus decumanus) on
 609 the deck, besides a bunch of the red fruits of the palm-nut tree or
 572 pandang (athrodactylis) which is a sign of friendship. This being
 done, they sold us all the shaddocks and fruit which they had, and
 609 came on board. In the mean while the other canoes arrived, and acted
 175 without the least caution, as if we had been long acquainted. They
 103 taught us the names of all the islands in the neighbourhood, that
 175 with the high cliff they called Terrefetches; the other, which we
 admired so much for its beauty, Tonoomes: both these lay to the east-
 ward of us. Mango-nooe (great) and Mango-eetee (little) were two
 islands to the west of us; and to the S.W. beyond them lay Namoka-
 nooe and Namoka-eetee; the first of which Tasman has called Rotterdam

[169 cont.]

103
175 Island, or Anamocka.

122 [170] After dinner the breeze freshened, and we sailed towards
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175 Namoka, which was the largest island of this group. The number of
canoes encircled about us, they came from all the neighbouring islands
with fruit, fish, and pigs, all which they disposed of for nails
and rags.

133
175 We had soundings all the day between these islands, at first
in forty and fifty, and afterwards, when we came nearer, in nine,
122 twelve, fourteen, and twenty fathom. About four o'clock having
hailed round the south end of Namoka, we came to, on the lee or west
side of it, where Tasman formerly lay. Our distance from the shore
133 was about a mile. The coast of the island rose fifteen or twenty feet
175 nearly perpendicular, after which it appeared almost level, having only
a single hillock near the middle. This steep shore had some resemblance
to the coast of Savage Island, which we had lately left, but the
137 richness of its woods was infinitely greater. Innumerable coco-nut
175 palms out-topped the woods, and ornamented the island on all sides.

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175 Whilst we were coming to an anchor, one of the natives caught
the lead, and tore the line which one of our people was heaving. He
was desired to return it, but took no notice of the captain who spoke
to him. A musket with ball was fired through his canoe; upon which
he calmly removed to the other side of the ship. Our demand was
repeated, and proving ineffectual again, was enforced by a load of
small-shot, which made him smart. He instantly [171] paddled to the
head of the ship, where a rope hung overboard, to which he tied the line
499 and lead. His countrymen were not satisfied with this restitution;
685 they turned him out of his canoe, and made him swim on shore, whilst
175

[171 cont.]

499 they continued to trade with us. They sold us coco-nuts, excellent
 175 yams, bread fruit, bananas, shaddocks, and other fruit. They also
 175 brought purple water-hens alive, and a fine well-tasted sparus ready
 dressed in leaves; also a curious stringy root baked, which contained
 a very nourishing pulp, of such a sweetness, as if it had been boiled
 in sugar. All these things were eagerly bought for nails, which were
 175 esteemed according to their size, and for pieces of our cloth. Their
 175 canoes, their persons, dress, customs and language so entirely
 resembled those of Tonga-Tabboo, that we could perceive no difference.
 203 As this island is at a short distance from Namoka, it is not improbable
 175 that the inhabitants of the latter might have heard of our arrival
 there in October, 1773.

193 The next morning [June 27] captain Cook landed early in a sandy
 175 cove, which is accurately described by Tasman. It is enclosed by
 a reef, and has a narrow entrance for boats at the south end. It is
 [499] so shallow, that our boats could only come in at high water. The
 captain purchased a pig, and was conducted to a pond of fresh water
 at a short distance from the beach, the same where Tasman had supplied
 609 his ships with water. The hospitality of the natives was exercised
 175 [172] in its utmost extent, and one of the handsomest ladies of the
 175 island complimented the captain with an offer, which was not accepted.
 648 Having examined the watering place, he returned on board to breakfast,
 175 and gave strict orders, that no persons infected with or lately cured
 of venereal complaints should be suffered to go on shore, and that no
 609 women should be admitted in the ship. A number of ladies came off in
 175 several canoes, and seemed very desirous of making acquaintance with
 our sailors; but after paddling about the ship for some time, they were

[174 cont.]

609 great loads for us; a nail, a bead, or even a small rag of cloth,
M5 being considered as a valuable present in return. In a word, they
[49] were on all occasions ready to oblige us.

133 [175] In the course of our walk we found a large lake or lagoon
M5 of salt-water, at the north end of the island, which at one place
reached within a few yards of the sea. It was about three miles
long, and one wide. Three little islands full of trees, arranged in
most picturesque manner, served to ornament this fine piece of water, of
which the shores also captivated the eye by their variety and beauty.
The inverted landscape on the water, rendered this scene still more
beautiful, especially as our point of view was an eminence, where
many tall trees and thick shrubberies screened us from the sun.

133 No island, which we had hitherto visited, had offered so great
137 variety of views to us in so small a space; nay, we had no where found
M5 such abundance of beautiful flowers, so agreeably contrasting their
various tints, and mingling their sweet scents to perfume the air.

136 The lake was full of wild-ducks, and the woods and shores abounded with
499 pigeons, parroquets, rails, and small birds, which the natives brought
M5 for sale.

499 At noon we returned to the trading place, where captain Cook had
M5 purchased a great quantity of fruit and roots, a few fowls, and one or two
small pigs. When we arrived on board, we found they had been equally
successful there in the purchase of provisions. The whole poop was
loaded with shaddocks, which we found a most delicious fruit, of
excellent flavour; and of yams we had laid in such a quantity, [176]
that we eat of them every day for several weeks afterwards instead of
Biscuit. Arms and utensils, the usual articles of trade of these

[178 cont.]

609 father remained sitting near Mr. Patton, with that unconcern which
 175 a noble and virtuous conduct inspires. She enquired for the name of
 her friend; he told her that which the Tahitians had given him, Pateenee;
 and she immediately adopted it, changing it into Patseenee. On
 stepping into the boat, he gave her father and her a few presents, which
 he borrowed from the crew, and with these they returned to their groves
 highly pleased. When Mr. Patton [179] came on board, he acquainted
 captain Cook with the danger to which he had been exposed; but though
 he had only followed the example of many of his shipmates, by reposing
 confidence in the natives, yet the loss of his fowling-piece was con-
 sidered as a proper punishment for his imprudence. The afternoon was
 [126] spent in different rambles on shore. My father, with a single sailor,
 walked over a considerable part of the island, without the least molestation
 from the inhabitants, and brought on board a number of new plants.
 [674] No other complaints arose against the natives this day, except some
 petty thefts, at which they were expert like their brethren of Tonga-
 Tabboo and the Society Islands.

122 The next morning [June 28] early we discovered several islands to
 the N.W. of us, which a haze in that quarter had hitherto screened from
 193 our sight. The two westernmost were high, one peaked, but the other
 175 more extensive. A thick smoke arose from the last, on which, during
 the night, we had observed a fire. The natives who came on board ac-
 quainted us that this fire was constant, so that we concluded it to
 109 proceed from a volcano. They called this island Tofooa (5), and the
 193 5. Tasman calls it Ama-Tofoa in his map. Ama or kama
 175 probably signifies a mountain.

peak close to it e-Ghao (6). To the northward of these two we discerned

[179 cont.]

103 6. Tasman calls it Kaybay in his map.

183 thirteen low islands, each of which the natives named to us.

175 [180] We hastened ashore after breakfast, to resume our enquiries.

172 We soon left the beach, where the natives were again assembled in great
191 numbers of both sexes. A most beautiful kind of lily (crinum asiaticum)
126 was the first plant which we met with and several others, not less valuable,
175 were collected soon after. We came to the watering-place, which was a
312 pond about a hundred or a hundred and fifty yards long, and fifty broad;
175 it contained stagnant water which was somewhat tainted with a brackish
taste, and might perhaps have subterraneous communications with the

648 salt lagoon, which in one place adjoined to it. Lieutenant Clerke, who
175 superintended the waters, told us that his musket had been nimbly snatched
191 away by one of the natives, who instantly ran off with it. We advanced
175 to the salt lagoon, and botanized, among the spacious man-groves which
124 surrounded it. These trees occupy a vast space of ground, and grow more
and more intricate by age. Their seeds do not drop off, but shoot down
from the top of the tree, till they reach the ground, where they take root,
648 and spread new branches. Whilst we were here, we heard three great guns
175 fired; but the sound being broken by many intervening objects, we suspected
that they were only muskets overcharged as usual, by some young gentlemen

609 on a shooting party. We left the lake soon after, and passed through a
175 plantation, where the natives bowed to us very kindly, and invited us to
648 sit down amongst them. [181] We were desirous of making the most of our
721 time, and therefore soon left them, and returned to the fresh-water pond.
175 Having fired a musket at some wild-ducks, which were in great plenty, we
were called to by Mr. Gilbert, the master, who told us that a volley of
small arms, and three cannon had been fired to alarm and bring us back,

[186 cont.]

193 The island of Namoka, which we left after a stay of two days only,
 162 was not above fifteen miles in circuit, but seemed to be remarkably
 191 populous. It lies in 20° 17' S. and 174° 32' W. In the group
 175 of islands which appeared around it, its size was the most considerable
 193 but all seemed to be well inhabited, and very rich in vegetable pro-
 162 ductions. They are situated on a kind of bank, on which there is from
 194 nine to sixty and seventy fathom water, and the soil is probably
 175 the same in every island. Namoka consists, like Tonga-Tabboo, of a
 193 coral-rock, covered with a rich mould on which all sorts of vegetables
 175 thrive. We had no time to examine the hillock in its centre, which
 194 seems to have had a different origin, and may perhaps be volcanic.

At present it is wholly covered with the richest groves, like the
 312 rest of the island. The abundance of fresh water in the pond, is an
 175 advantage which the people of Namoka enjoy [187] in preference to those
 515 of Tonga-Tabboo; but it does not appear that they bathe so regularly
 as the Tahitians, perhaps because the stagnant water is not very in-
 823 viting. Its advantage is however so much felt, that the natives brought
 415 it to the ship in calabashes, and did the same to Tasman, which implies
 197 that it is looked upon as a valuable article among them. The abundance
 175 of water, and the richness of the soil likewise seems to be the reason,
 that bread-fruit and shaddock trees are much more frequent, and all
 417 vegetation infinitely more luxuriant than on Tonga-Tabboo. The fences
 on that account are not laid out, and kept up with that extreme
 regularity, though they are still preserved in part. The long walks
 of fruit-trees, and the delightful green turf under them, were rather
 to be compared to the richest spots on Ea-oo-we, or Middleburg Island.
 The tufted arbours which vaulted over the paths, are hung with beautiful

[191 cont.]

122 to several low islands, all which seemed to be well inhabited and fertile, like so many beautiful gardens. After dinner the wind became contrary, and abated, so that we rather lost than gained ground.

499 A few canoes came up with us again, for the natives spared no labour
175 to obtain our nails and rags of cloth. Towards evening we were surrounded by a little fleet, and the trade was very brisk, chiefly for the utensils and arms of the islanders, which are made with remarkable neatness.

648 The canoes returned once more to us the next morning [June 30]
175 putting off at day-break from all the little islands in sight. Their
502 appearance and their sailing afforded us much entertainment. Before
175 the wind they go extremely swift, being well contrived for that purpose, and their broad triangular sail gives them a very picturesque form

122 at a distance. We left them in a short time, when the breeze freshened, and [192] sailed towards the two high islands, which we had discovered

439 whilst we lay at anchor. In the afternoon three canoes came up
175 with us again; and one of them, with 50 men on board, traded with us just as we were in the narrow passage between both islands. The larger,
101 to the southward, which is called Tofooa, appeared to be inhabited.

191 Some of the natives on board our ship told us it had fresh water,
175 together with coco-nut, banana, and bread-fruit trees. We saw indeed
[312] a number of palms, and a great quantity of the club-wood. The whole island, though steep, was in some places covered with verdure or shrubbery.

133 Towards the sea, and especially towards the other island, the rocks
175 seemed burnt, and black sand covered the shore. We approached within a cable's length of it, but found a depth of eighty fathom, which prevented our coming to an anchor. The rocks towards the passage,

T [192 cont.]

175 which was not above a mile across, were cavernous, and in some places
175 had a rude columnar shape. The day was somewhat hazy, and the top of
the island was therefore covered with clouds. The smoke however rolled
up with impetuosity, and seemed, before we had passed the strait, to
issue from the other side of the mountain. As soon as we had passed it,
it appeared to arise from the side which we had just left. This deception
proves, that the top of the mountain was hollow, or formed a crater,
from whence the vapour was thrown up. There was a spot on the N.W. side
of the island, somewhat below [193] the place where we saw the smoke
come out, which had the appearance of being lately burnt: it was destitute
of verdure, though the mountain on both sides of it was covered with
various plants. When we came exactly into the line in which the smoke
was carried by the wind, we had a small shower of rain, and many of
us felt it very biting and sharp, when it dropped into our eyes. It
is probable from thence, that it carried down with it some particles
which the volcano had ejected. The wind being at S.S.E. and freshening,
we left this island, without being able to make any further observations
upon it; though it well deserved the attention of the learned, who make
the revolutions which our globe has undergone, the object of their useful
and curious enquiries.

L
122 We sailed to W.S.W. and continued the same course all the next day
175 [July 1]. The following day, very near noon, we discovered land, which,
177 from the direction of our track, had never been seen by other navigators.
We ran toward it, and before night approached pretty near it; but found
breakers before us, which obliged us to tack all night, for fear of an
accident. Several lights which appeared on shore as soon as it was dark,

[193 cont.]

122 announced to us that the island was inhabited.

175 The next morning [July 3] we bore down upon it again, and came
177 round its east end. It appeared to be about seven miles long, and
175 had two small hills of very gentle ascent, [194] wholly covered with
177 woods, like the rest of the island. One end sloped into a flat point,
193 on which we observed fine groves of coco-palms, and fruit-trees, together
with houses in their shade. A fine sandy beach surrounded the shore,
and at the distance of half a mile, a coral reef encompassed the east
side of the island, which at the points projected near two miles from
175 the shore. On this reef we soon perceived five blackish-brown men,
177 with clubs in their hands, looking at us very attentively. We hoisted a
609 boat out, and sent the master to sound an opening between the reefs
which we saw before us. He went on through the entrance towards the
shore, where we observed upwards of thirty inhabitants sitting. Amongst
them ten or twelve were armed with spears; but as soon as our boat
came near, they hauled a canoe into the woods, which had brought their
five men to and from the reef, and all ran off when the master landed.

[193] He laid some nails, a knife, and few medals on the sandy beach, and
returned on board, to acquaint the captain that there was no bottom in
175 the entrance of the reef, and not sufficient depth within it. He had
177 observed a dozen or more large turtles swimming in the harbour; but
196 being destitute of harpoons, or other instruments, could not strike any
122 of them. Our boat was hoisted in again, and the hopes of botanizing
175 on this island were entirely frustrated. We continued standing along
177 its reef, on which we observed some large single rocks of coral, near
[126] fifteen feet above the [195] surface of the water, narrow at the base,
[193] and spreading out at the top. Whether an earthquake had raised them so

Chapter II

THE KINGDOM OF TONGA
AND THE RESEARCH SCENEGeography and Geology

131 Tonga is an island nation situated near the western edge of the
101 Polynesian culture triangle. The Kingdom consists of over 150 islands divided into three geographically separate groups: Vava'u in the north, the Tongatapu group in the south, and Ha'apai between them (Map 1). Niufo'ou lies to the north of Vava'u and is the most northerly of the Kingdom's possessions. About 450 miles south of Niufo'ou lies 'Ata, the most southerly extension of the archipelago.

133 Geologically Tonga consists of islands formed by two processes- volcanic eruption and elevation of limestone formations so that both "high" islands and "low" islands are represented (Thomas 1967: 13-18). By island type the archipelago is divided into two chains both running north by northeast, with the volcanic chain to the west of the corraline chain and running parallel to the latter.

132 Tonga has a climate of moderate temperatures and precipitation. Winds are generally from the southeast and seldom reach hurricane speeds. Rainfall, temperature, and humidity generally increase from the south to the north. For instance, in 1970 annual rainfall on Tongatapu measured 77.59 inches and on Hiuatoputapu 98.09 inches were recorded. Temperature on Tongatapu varied from a daytime high of 88.5° F.

(TEXT CONTINUED ON PAGE 13)

The Village and the Research Scene

101 The village selected for research is on the main island of the
 103 Tonga group, Tonatapu. Its name is Puke (pronounced Pookay, please).
 (361) Gifford (1926: 196) in his catalogue of Tongan place names enters Puke
 as the gloss of fortress.^A However, the term has several seemingly un-
 related definitions in the Tongan language; the villagers thought the
 name referred to a small hill in the village as the term denotes the
 small hill above a planted yam. The village is located about 3 miles
 (361) west of Nuku'alofa; it is 1/4 mile from the main road going west from
 (131) Nuku'alofa and about twice that distance from the lagoon to the north
 (See Map 2).

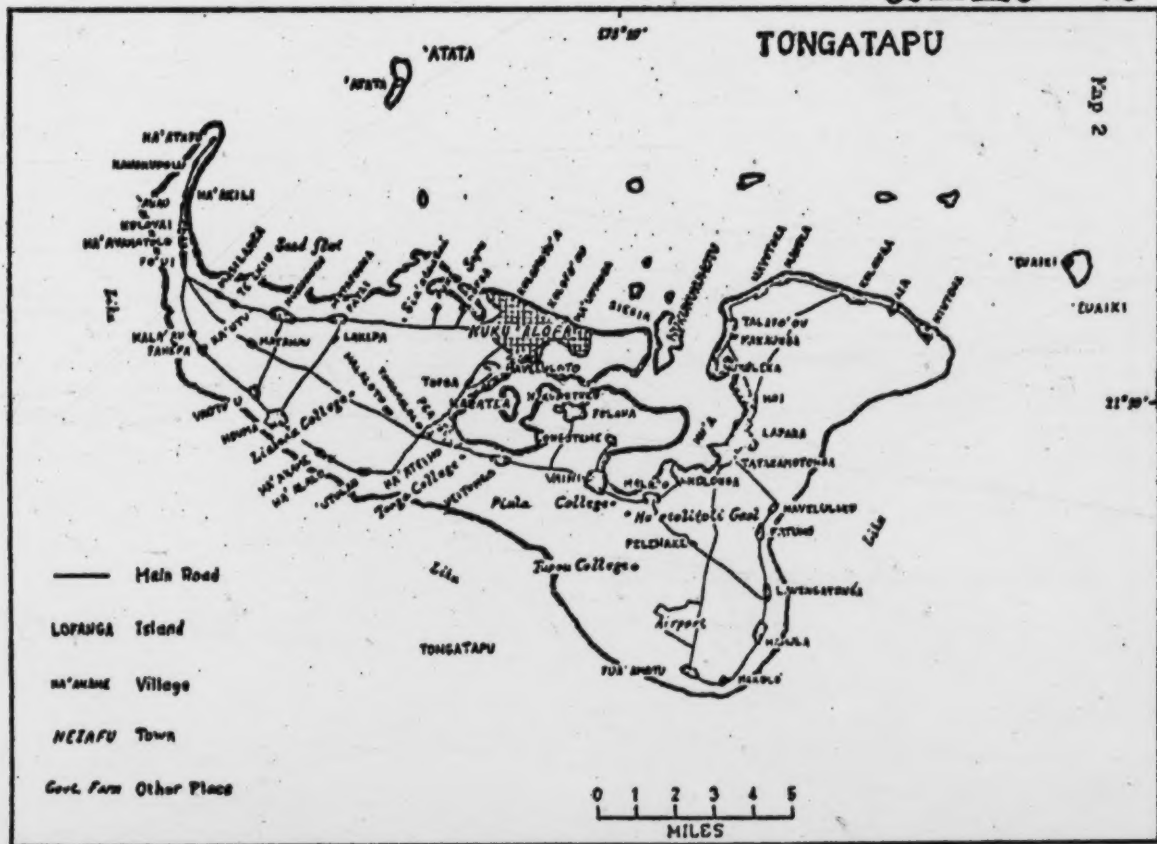
133 The terrain of the village and surrounding lands is flat and low-
 lying. Village boundaries are easily distinguishable as fallow, and
 361
 (241) producing garden plots stop abruptly at the perimeters of the village
 compound. For some purposes the village and its population are divided
 into three geographically defined sections. The sections are the east-
 ern section (vahe hahake), the central section (vahe loto), and the west-
 ern section (vahe hihifo); the sections are under the leadership of the
 noble, the church steward, and the town officer, respectively.

361 Within the village are small patches of low-lying bush and many
 245 trees have been left standing or planted; most prominent among the lat-
 ter are the coconut palm (niu), breadfruit (mei), mangoe (mango), and
 (321) the tava and 'ifi trees. Many of the plants and trees growing within
 (262) the village have uses as food, medicine, or decoration.

(278) ^A. [What Gifford actually says is "the outworks of a fortress". See 4: Gifford, this file p.196--Anal.11]

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73: Morton E-5 (1970-1971) 1977 OU9 Tonga OU9
Puke



128 For this dissertation examples are drawn from sources pertaining
101 to the Polynesian archipelago of Tonga. Tonga derived its name from
103 the principal island of the group, Tongatapu or sacred Tonga. The
"tapu" was probably appended to the "Tonga" because this island became
101 the residence of the leaders of the archipelago. Tongatapu island was
the focal point for the political and religious system in the archi-
174 pelago prior to and after European contact. The Polynesians who ori-
133 ginally settled all of the Tongan archipelago appear to have chosen
this relatively flat island, no higher than 200 feet above sea level
along points on the southern or cliff-bound liku coast, because of
133 terrain and climate. The middle, or Ha'apai, group of islands, tradi-
tionally set off from Tongatapu by the volcanically formed islands of
Hunga Ha'apai and Hunga Tonga, are a series of low islets. The northern-
most island group of Vava'u has relatively high hills, with most of the
132 land being at least 100 feet above sea level. Vava'u was, and is,
182 subject to more destructive hurricanes than Tongatapu during the hurri-
cane season and it was only on Tongatapu that relative permanency of
material culture and continuity of leadership could be maintained for
generations.

131 The territorial boundaries of the Kingdom of Tonga were pro-
claimed by King George Tupou I to be 15°S and 23°S and 173°W and 177°W
(Tonga Government Gazette, Vol. 2, No. 55, August 24, 1887). The
islands of the Kingdom thus fall within a rectangle of the South Pacific
some 596 miles North-South by 264 miles East-West, with the outer
islands of the Kingdom being Niua Fo'ou Island to the North at 15°34'S

131 and 175°40'W, and 'Ata Island to the South at 22°20'S and 176°12'W.
'Ata Island is approximately 100 miles southeast of the main island of
Tongatapu and Niua Fo'ou Island is approximately 232 miles northwest of
the Vava'u group of Islands.

- 133 The Kingdom of Tonga consists of some 150 to 200 Islands and
Islets, with perhaps only 25% of these being inhabited. The Islands
are a form of raised limestone, or volcanic in origin, or a combination
of marine volcanic formations and limestone formations (Anonymous 1944:
16). The most recent work indicates that the total land area of the
Kingdom is 256.42 square miles, with the Tongatapu Group (the main
island of Tongatapu with surrounding small islands but excluding the
Island of 'Eua) having 100.37 square miles of that total or some 39.1%
(Vide Maude 1965: 218). Tongatapu Island is approximately 99 square
161 miles in area. The estimated population for the entire Kingdom for
December 31, 1970 was 86,055 (Tapa 1971: 4).

European Contact

- 175 Part of the Tongan archipelago was first contacted by the Dutch
177 navigators Schouten and Le Maire in 1616, and various contacts with
Europeans followed: 1643 (Tasman), 1767 (Wallis), 1773, 1774 and 1777
(Cook), 1781 (Maurelle), 1787 (La Perouse), 1789 (Bligh), 1792 (Edwards),
1792 (Bligh), 1793 (D'Entrecasteaux and Labillardiere), and 1793
(Malaspina) (Vide Colson 1885: 257ff.; Tudor 1968: 125-127). These
contacts between Europeans and Tongans were sporadic and lasted for
periods of a few days to a few weeks. The accounts written by these

Plants of Tonga¹

By T. G. YUNCKER

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INTRODUCTION

The Tongan archipelago is a group of 150 or more islands and islets of volcanic and coral formation. Of these, only a relatively small number are sufficiently large or topographically suitable for plantations adequate to support populations of any size. Most of the islands are arranged in three main, roughly circumscribed, areas situated in the southern, central, and northern parts of the archipelago known as the Tongatapu, Ha'apai, and Vava'u groups respectively. The islands of these three groups are arranged in two roughly parallel lines from slightly southwest to northeast in the south Pacific Ocean between 15° and 23° south latitude and 173° and 177° west longitude. To the north, and somewhat remote from the northern Vava'u group, lie the volcanic islands of Niuafo'ou, Tafahi, and Niuatoputapu (Keppel). The islands of the eastern line are the more numerous and are of coral origin. For the most part, they are low, flat, and topographically uninteresting. The western line, extending from the extreme southern and at present uninhabited island of 'Ata to Niuafo'ou on the north, is of volcanic origin. It includes the island of Kao in the Ha'apai group which rises to a height of about 1,000 meters, the highest of the Tongan islands. Some of the islands—for example, Tofua, Fonualei, and Niuafo'ou—are still volcanically active. Tongatapu, the largest of the coral islands, with an area of nearly 100 square miles, is very flat and reaches an altitude of scarcely 90 meters at its highest point. On it is located Nuku'alofa, which is the largest town in Tonga and the seat of government (fig. 1, a). [101] [133] [13] [101] [133] [361]

A few miles to the east of Tongatapu lies the island of 'Eua, about 35 square miles in area and composed of a volcanic base overlaid for the most part with limestone. It has been built up to a height of approximately 300 meters at its highest point. An elevated ridge runs along the eastern side of the island, rendering that coast rugged and very picturesque (fig. 1, b). The seaward face of this ridge is precipitous in places, and some parts are reached only with great difficulty. A much lower ridge, with a maximum height of about 100 meters, lies toward the western side. The ridges and slopes, especially those on the eastern side, are well covered with native vegetation. Here, one finds some of the largest trees and densest forests in all Tonga. Specimens of [133] [131] [137]

¹ The opportunity to visit the Tongan Islands and collect the data upon which this study is based was made possible by a John Simon Guggenheim Memorial Foundation Fellowship and a grant from the National Science Foundation. The manuscript was completed in 1955 and submitted to Bishop Museum for publication. [122]

[p. 2]

[TEXT CONTINUED ON PAGE 5]

Yuncker—Plants of Tonga

5

Laportea harveyi, *Rhus taitensis*, *Alphitonia zizyphoides*, *Dysoxylum* spp., 137
and other trees may reach considerable size. Tongatapu and 'Eua are the only [107]
permanently inhabited islands of the Tongatapu group.

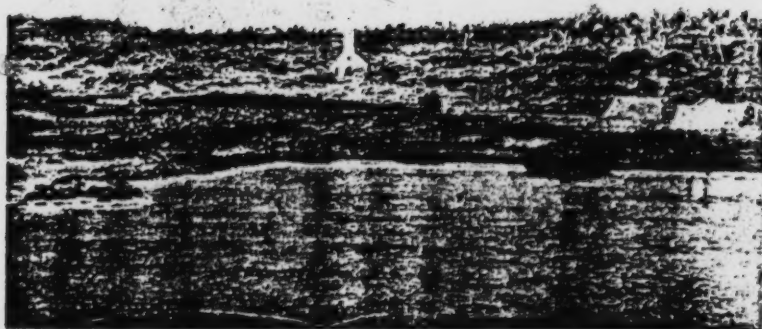
The central, or Ha'apai, group is about 90 miles from Tongatapu. It in- 131
cludes the main islands of Lifuka, the former capital and site of the Chief's 161
Palace; Nomuka; Kao; Tofua; and a large number of smaller islands, many
of which now support no permanent inhabitants.

Vava'u, the largest and principal island of the Vava'u group, has an area 133
of approximately 35 square miles and reaches an altitude of about 150 meters
along the precipitous northern coast. Its surface is uneven and the southern, 504
very irregularly and deeply indented coastline provides a beautiful and com- 361
pletely land-locked harbor, where the principal town of Neiafu is situated. At
the northwestern part of the island is a lake of brackish water and nearby is a
rather large swamp of marshy area unique in the islands. Another, a large
central lake connected at one point with the sea during high water, is found
on the island of Nomuka in the Ha'apai group. Large crater lakes also occur
on Tofua and on Niuafo'ou. Ocean-going steamers are able to dock at Neiafu 504
in Vava'u and at Nuku'alofa on Tongatapu. Cutters and interisland boats can
reach a jetty at the village of Pangai on Lifuka Island in the Ha'apai group,
and it is possible for very small boats to make a landing at a makeshift dock
on 'Eua. And it is usually possible, in moderate seas, to get ashore from
canoes or other small boats on the other low coral islands. It is much more 504
difficult, however, to land on the volcanic islands of Tofua, Kao, Late, Niua- 133
fo'ou, or Tafahi where most of the coast is steep and abrupt and where pro-
tecting reefs are lacking or do not break the often strong wave action. These
islands can be reached only by canoe or small boat and under most favorable
weather conditions, or by swimming from larger boats which must stand well
off shore for safety.

The population of Tonga is nearly 50,000. It is heavily concentrated on 161
the islands of 'Eua, Tongatapu, Nomuka, Lifuka, and Vava'u and some of the 162
smaller adjacent islands. The volcanic islands of 'Ata, Tofua, Kao, Late, and
Niuafo'ou have few or no permanent inhabitants at the present time. The 731
former population of about 1,300 on Niuafo'ou was evacuated after the dis- 166
astrous volcanic eruption in 1946, and at present makes up a large part of the
population on 'Eua. (See figure 2.)

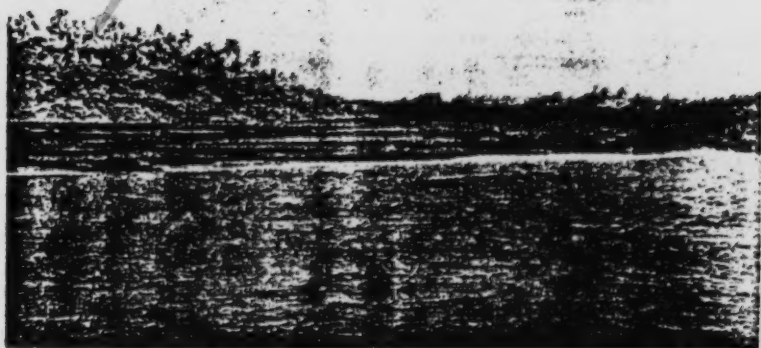
The more heavily populated islands show a high percentage of land utiliza- 137
tion, the indigenous plant species surviving only in occasional uncultivable 311
areas, usually near the sea. Everywhere grows a number of species of greater
or lesser usefulness presumably brought to the islands by the aborigines as
they arrived in Tonga from other islands. These species predominantly show
Asiatic, African, or Malaysian origin. A possible exception is the sweet potato,
and there is considerable question as to how it reached Polynesia. In this group
one may include that most useful of all plants for island peoples, the coconut.

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731
[346]



a

[137]



b

FIGURE 2.—a, remains of church in village on Niuafo'ou Island destroyed by 1946 eruption (note lava flow which reached sea); vegetation is rapidly pioneering on older flows. Houses on right are used by temporary visitors who come to cut copra. b, lava flow on island of Niuafo'ou, where an extensive beach of "black sand" has been formed. [137] Background trees at right form large grove of *Casuarina equisetifolia*.

Genus *Quisqualis* Linnaeus

137 *Quisqualis indica* Linnaeus, Sp. Pl., ed. 2, 556, 1762.

[824] A tropical Asiatic vine widely planted for ornamental purposes. Occa-
[245] sional about dwellings in Tonga.

[133]

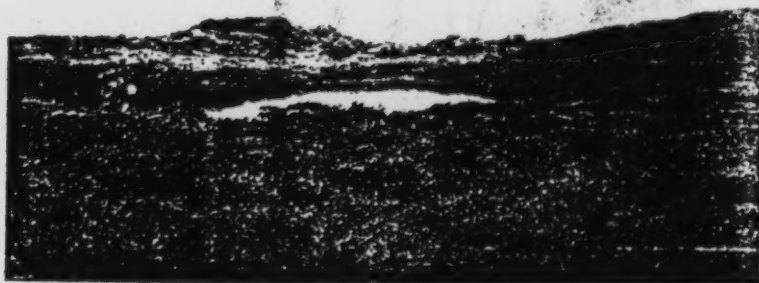


FIGURE 12.—Sinkhole on central plateau of 'Eua island. Much of the "bush" is *Psidium guajava*.

FAMILY MYRTACEAE

Genus *Psidium* Linnaeus

Psidium guajava Linnaeus, Sp. Pl., 470, 1753 (fig. 12).

Shrub or small tree, up to 3 m. or more tall, young branches quadrangular, pubescent. Leaves simple, opposite, oval-elliptic or oblong, apex rounded, base obtuse or acutish, up to 12 cm. or more long and 6 cm. wide, rather thick, pubescent beneath, prominently pinnately nerved, petiole up to about 1 cm. long. Flowers about 2.5 cm. wide, axillary, corolla white; fruit size of a small lemon, yellow, flesh pink when ripe, fragrant, edible.

Tongatapu: in thicket along road near village of Niutoua, Mar. 2, 1953, Yuncker 15112.

Occasional to frequent throughout Tonga; rather large colonies grow on 'Eua. It appears to be spreading in Tonga and promises to become a pernicious weed. A tropical American species of relatively recent introduction.

Tongan name: *kuava*.

[824] The fruit is used as food.
[262]

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FIGURE 16.—Beach scene on the island of Tongatapu. Strand plants are, for the most part, species of wide distribution on Pacific islands.

FAMILY GOODENIACEAE

Genus *Scaevola* Linnaeus

137

Scaevola floribunda A. Gray, Am. Acad. Arts Sci., Proc. 5: 152, 1861.

Hemsley includes this species in his list on the basis of a specimen collected by the U.S. Exploring Expedition. No specimens are known to have been taken by subsequent collectors. A. C. Smith states that as far as he knows, the species is a Fiji endemic and, furthermore, that he finds no U.S. Exploring Expedition collection from Tonga in the U.S. National Herbarium.

Scaevola frutescens (Miller) Krause, Pflanzenr. 54 (IV. 277): 125, fig. 25, 1912, var. *frutescens*.

Shrub, up to about 2 m. tall, stems stout, with large pith. Leaves alternate, with hairy tufts in axils, oblong-spatulate, obtuse, base cuneate-decurrent, up to 15 cm. long and 8 cm. wide, margins somewhat wavy and obscurely toothed, crowded toward ends of branches, petiole short, winged by decurrent blade margins. Flowers white or pale lavender, appearing as though partly lacking, in cymose, axillary clusters; fruit subglobose, about 1 cm. in diameter, white, fleshy.

Tongatapu: in seaside thicket, Sopa, west of Nuku'alofa, May 30, 1953, Yuncker 16210; forming a strand association just above high-tide limit, below Navutoka village, Feb. 27, 1953, Yuncker 15102; forming clumps along beach to east of Nuku'alofa, Mar. 7, 1953, Yuncker 15217.

*Tonga*¹

EQUALITY OVERTAKING PRIVILEGE

ALARIC MAUDE

423 THE SYSTEM of land tenure which has existed in the Kingdom
 641 of Tonga since the late nineteenth century differs in many
 respects from those of other parts of the South Pacific, its two
 most distinctive features being that land rights are granted solely
 to individuals, and that every taxpayer (that is, every male
 Tongan aged sixteen years and over) is entitled to eight and
 one-quarter acres of agricultural land and a small town allotment
 121 on which to build his house. These features, and others described
 below, raise a number of questions. Does the present system
 differ significantly from that of the pre-contact past? How effective
 is it in practice, and does it provide a sound basis for agricultural
 development? Are tenure changes necessary to cope with the
 present rapid population growth? This chapter attempts to
 answer these questions.

131 The 150 islands of Tonga are scattered over 450 miles of ocean
 [161] in Western Polynesia. With a total land area of only 256 square
 miles they support a population of about 80,000 persons. The
 133 Kingdom's only natural resources are the soil and the surround-
 [433] ing reefs and seas, and the economy is overwhelmingly agricul-
 [361] tural. Over ninety per cent of Tongans live in the three main
 groups of Tongatapu, Ha'apai and Vava'u, where the islands
 are of raised limestone formation. The surface of Tongatapu is
 flat or very gently undulating and as in all the islands of this
 type there are no permanent streams. The islands of Ha'apai
 are small, low and scattered, while those of Vava'u are higher
 134 and have a terraced appearance. About eighty-five per cent of
 the total land area of the raised limestone islands is suitable for
 cultivation, and the soils, being largely derived from volcanic
 ash, are very fertile. The main soil type of these islands is a

GEOGRAPHY OF TONGA.

THE TONGAN ISLANDS: THEIR POSITION AND FORMATION.

131 There are over 150 islands in the Tongan group, but most of them are very small and only 36 are inhabited. The total area is 269 square miles, and the population is 28,839. Thus Tonga is one of the smallest groups in the Pacific Ocean, very much smaller than Fiji or Samoa, for example.

631 The islands are divided into three main groups; these are, TOGA-TABU in the south, HA'ABAI in the centre, and VAVA'U in the north. Ha'abai is an extensive archipelago of very small islands, but the Togatabu and Vava'u groups consist of one larger island as well as many small adjacent islands in each case. This division is not merely geographical but also commercial and political. The three ports of call are Nuku'alofa, the capital, in Togatabu; Lifuka, the main island of Ha'abai; and Neiafu, the chief village of Vava'u. The Government is represented by separate Governors in Ha'abai and Vava'u.

131 Although the total area of Tonga is so small, the islands are scattered over a comparatively wide expanse of the South Pacific Ocean, between 15° and 22° South Latitude and 173° and 175° West Longitude. The position of Togatabu is 21° South Latitude and 175° West Longitude. Vava'u is in approximately the same latitude as Townsville, and Togatabu as Mackay, North Queensland.

805 Tonga actually is in the Western Hemisphere, but in spite of this it observes eastern time, that is, the same time as places in the Eastern Hemisphere (Europe, Asia, etc., and as far as Fiji), and not the time of the Western Hemisphere (America, etc.). For instance, when it is 2.20 p.m. Thursday at Nuku'alofa, it is 2 p.m. at Suva, 1.30 p.m. at Auckland, 12 noon at Sydney and 2 a.m. at London—all these times being on Thursday—but it is Wednesday, 6 p.m. at San Francisco (U.S.A.) and 2.30 p.m. at Apia. Although it is 2.30 p.m. in Samoa when it is 2.20 p.m. in Tonga, nevertheless, the day is rightly called Wednesday in Samoa, while in Tonga it is called Thursday, owing to the fact that, as Tonga's commercial dealings are chiefly with Australia, New Zealand and Fiji, it observes the same day as those countries.

131 Nuku'alofa is 2,000 miles direct from Sydney; by the steamer route, the distance is 1,740 miles from Sydney to Suva, and 430 miles from Suva to Nuku'alofa. The distance from Nuku'alofa to Auckland is 1,100 miles, about 50 miles less than from Suva to Auckland.

133 The Tongan Islands are called oceanic islands, as they are not close to a continent nor surrounded by shallow water, thus differing from continental islands like Great Britain. The ocean west of Tonga is less than two miles deep, but east of 'Eua it is over five miles deep; indeed, there is a very deep trough or ocean-valley, called the Tonga Deep, which passes east of Tonga and continues to the east of New Zealand, reaching a depth of nearly six miles off the Kermadec Islands between Tonga and New Zealand. The Tonga Deep is one of the deepest parts of the

Position and Formation.

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ocean-floor, and when subsidences occur along this line earthquake-shocks are felt in New Zealand and other places to the west of this ocean-valley. 133

The Tongan Islands run north and south in two parallel chains, the western volcanic and the eastern coralline. The volcanic islands descend steeply into the sea, but the coral islands have barrier reefs round them.

The western volcanic islands extend in a direct line from 'Ata to Niua Tobutabu and Tafahi, only Niua Fo'ou being off this line to the north-west. They are part of a volcanic chain which stretches from New Zealand through the Kermadec Islands to Savai'i in Samoa. Eruptions frequently occur along this chain not only in some of the islands but also under the sea. Sometimes a new island, like Falcon Island, is formed by these submarine eruptions, and at other times no land appears but the sea is filled with pumice and ash which float on to the beaches of Togatabu and other islands.

The coral islands in the eastern chain have been built up by countless myriads of tiny animals, the coral polyps, in the millions of years gone by. These polyps are still working and dying, leaving their skeletons to form gradually the reefs and islands that strew these seas. The reefs of to-day are the islands of the future. 136

Volcanic material forms the base of all the islands we call coralline, the coral limestone being merely the upper part. Falcon Island shows how islands have been made throughout the Pacific, and it illustrates the way in which volcanic activity has heaved a part of the ocean-floor so close to the surface that coral polyps could work there. Coral polyps cannot live more than 150 feet below the surface of the sea, but neither can they live above high-water mark. Therefore it is also clear that high coral islands like 'Eua and Vava'u have been further uplifted by earth-movements at various times during past ages since the work of the coral polyps ceased. All this took millions of years, and obviously elevated coral islands like 'Eua must be very old indeed. Scientists who have visited 'Eua have shown, from the various layers in the cliffs, that 'Eua has been lifted higher at many periods and that it must be one of the oldest islands in the Pacific. The action of the weather—rain, wind, etc.—for millions of years has completed the work, and has worn and smoothed the islands into their present shape. Coral islands have one side comparatively high (the liku) and the other a low, shelving side. 136

When our islands first appeared as reefs above the water, and for long afterwards, they were mere rocks without soil. Gradually, however, birds dropped some seeds, and others like coconuts were borne by the waves from other islands and washed up on to the reefs. Such seeds grew, and in time they died, decayed and formed soil, and in this soil other plants grew. This process required many ages, but now these islands are covered with soil, which is nowhere very deep, not more than 12 feet in most places in Togatabu and generally much less; and below that is the coral limestone, the only kind of stone on a coral island. 134

Many of the present reefs serve a useful purpose as barrier reefs protecting the low islands, although they are a great danger to navigation. 133

(NOTE. The maps of the various parts of Tonga should be studied to make these explanations clearer.) 000

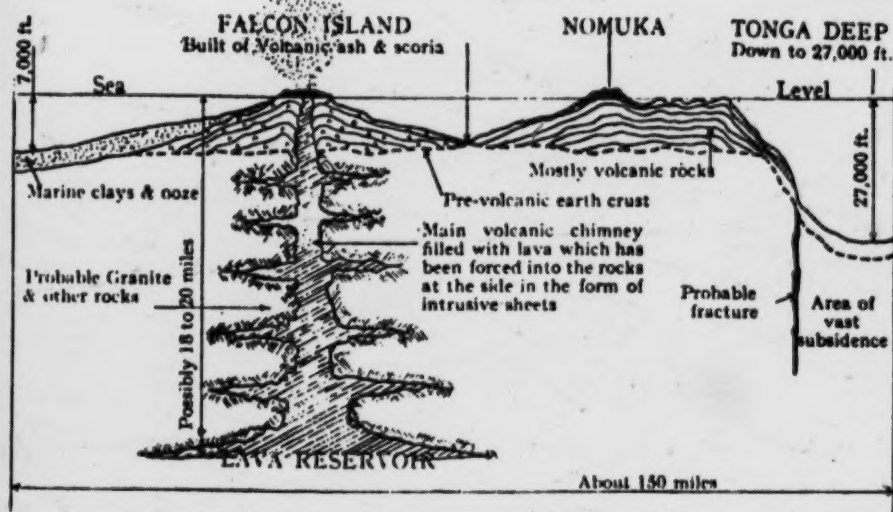
THE VOLCANIC ISLANDS

(INCLUDING FALCON ISLAND AND NIUA FO'OU).

175 (1) 'ATA. Tasman sighted this island in 1643 as he sailed from
 103 New Zealand, and he gave it the name of Pylstaart. It is 85 miles S.S.W.
 of Togatabu. There are two peaks, the higher being 1,165 feet, but the
 133 volcano is extinct. 'Ata contains deposits of guano, suitable for manure,
 136 but the lack of a harbour renders these useless commercially. The island
 was formerly inhabited. One account stated that people drifted there
 174 from Tofua, Tugua and also from Houma in Togatabu, and relationship
 166 with people in those places has been claimed by descendants of the 'Ata
 people. Another explanation is that 'Ata was settled by refugees from
 Atata who fled from the invasion of a cannibal chief, 'Uhila, of Nomuka,
 and that these intended to flee to Togatabu but were blown south in a
 storm. Still another account relates that refugees from Atata fled in
 this way but it was because of the invasion of their island by Finau Ulu-
 166 kalala II in 1799. Shortly after 1860, Tubou I ordered the 200 inhabitants
 [135] of 'Ata to remove to the village of Ha'atu'a or Kolomaile in 'Eua, on
 account of islanders being taken away by kidnapping ships to work in
 the mines of Chile, South America. 'Ata was too isolated to be protected
 then, and on account of its position and lack of an anchorage it has not
 again attracted a population.

133 (2) HUGA TOGA is 490 feet high. (3) HUGA HA'ABAI is
 135 400 feet high. These sister-islands, north-west of Togatabu, contain
 deposits of guano but have no anchorage. Volcanic activity has long
 ceased.





FALCON ISLAND.

ALTERNATELY AN ISLAND AND A SHOAL
IN THE TONGA OR FRIENDLY ISLANDS GROUP.

Theoretical diagram after T. W. EDGEWORTH DAVID, K.B.E., F.R.S.

(4) FALCON ISLAND (Fonua Fo'ou). This "Jack-in-the-box Island" has erupted and disappeared several times within living memory, leaving only a reef or shoal. The Spaniard, Maurelle, in 1781, and the Frenchman, La Perouse, in 1787, marked a reef near this spot. H.M.S. "Falcon" observed the island in 1865, and in 1877 H.M.S. "Sappho" saw smoke there rising from the sea. In 1885 the island appeared again and was claimed by the Tonga Government; but gradually it vanished, and by 1898 only a reef remained. The reason for the disappearances of Falcon Island is that it is formed only of volcanic ash, which is easily washed down by the rain and waves. No growing coral has ever been found there.

The last appearance occurred in October, 1927, when smoke and steam rising several thousand feet could distinctly be seen from Nuku'alofa, 45 miles away. In May, 1928, the island was visited by scientists and also by the Premier of Tonga, who annexed it for the Government. The island was then roughly circular, about two miles across, and 365 feet high. The crater was near the south-east of the island, nearly a mile

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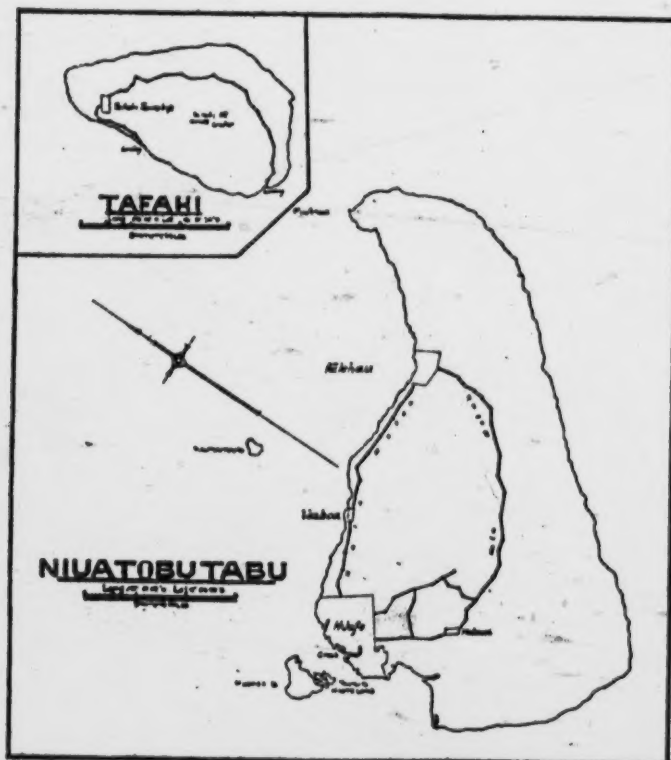
133 wide, constantly steaming, and surrounded by deposits of sulphur. The prevailing South-East Trade Winds carried the ejected material to the north-west of the island. Water entered the crater-lake from the ocean, as the eastern wall of the crater was very low; the water in the lake was thickly coated with sulphur and had a vile taste. Already in 1928 the waves were breaking down the soft cliffs, and the rain had made deep gullies down the slopes. It is the opinion of scientists that occasional sinkings of the ocean-floor in the Tonga Deep, which sometimes cause earthquakes in New Zealand, at other times cause lava to be pumped up through the opening in Falcon Island, and this accounts for the periodical re-appearance of this island of soft ash and scoria. Since 1928 smoke has been seen at various times, but the island is being washed down again.

133 (5) TOFUA is a large island, 1,700 feet high, over five miles long and about four miles wide. Its area is 21 square miles, of which over three square miles is the area of the lake in the crater of the active volcano, which the Tongans call Lofia. Smoke can often be seen issuing from the summit of this volcano, but there is no record of any destruction caused in recent years. Formerly the island was inhabited, the village being called Manaka. In 1789, when Bligh and his loyal sailors, who had been cast adrift from the "Bounty" between Nomuka and Tofua, landed at Tofua to get water, they were attacked by the natives who killed the quartermaster, Norton. The island has been deserted since 1854, when Tubou I ordered the inhabitants to leave because of the risk of eruptions. Tofua and Kao are now used only for gardening by people from the neighbouring small and crowded islands of Fotu'a, Matuku and Kotu; these people also occasionally hunt the wild pigs with which Tofua is infested.

133 (6) KAO is an extinct volcanic island, a perfect cone like Egmont in New Zealand and Fujiyama in Japan. The summit, called Tokonakao, is 3,380 feet high, the highest point in the Tongan group, and easily visible from Lifuka, 35 miles to the eastward. There was a village on the island long ago, but on the shore, not on the summit as an old story states. The narrow channel between Tofua and Kao is deep.

[131] (7) LATE has a dormant volcano which has not erupted since 1854. Its area is over six square miles and height 1,700 feet; it has two craters and a small lake. The peak is plainly visible for 50 miles on clear days, and has always been a landmark for navigators. Late was formerly inhabited, but its people were taken to Huga, Vavau; it still contains the remains of a fort with a stone wall. The island is very fertile and densely-wooded.

[131] (8) FONUALEI is 40 miles N.W. of Vava'u and 600 feet high. It was discovered by the Spaniard, Maurelle, in 1781; he named the island Amargura (Spanish for "bitterness"), because of his disappointment in not getting food and water there. Though the volcano at Fonualei has been dormant for some years, in 1846 it threw ashes over such a great area that the gardens in Vava'u were spoiled, and some ashes were borne by the wind to ships as far as 500 miles away. The Government now forbids habitation there and on the neighbouring small island, Toku. Toku was formerly inhabited by refugees from Ha'amea, near Nafualu, Togatabu, where tribal fighting often took place. The people of Toku had gardens on Fonualei, but they now live at Utulei, Vava'u.



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(9) NIUA TOBUTABU is 167 miles north of Vava'u. The island may be classed as of volcanic formation though there is no sign of any recent activity there. Niua Tobutabu is generally flat but rises to a hill 350 feet high in the centre. The area is nearly six square miles, and there are four villages with a population of 743. The island is subject to hurricanes, the last severe one having taken place on 26th December, 1930. The rhinoceros beetle which entered from Samoa threatened to destroy the coconuts within recent years, but it has now been exterminated. There are two large stones on the island, called Fakafafa, said by a legend to have been placed there by Maui. A spring with its small stream, Niutoua, is an unusual sight in Tonga. The first Englishman who came to Tonga, Captain Wallis, in 1767, named Niua Tobutabu Keppel and Tafa'hi Boscawen, after two English admirals, and Keppel is the name still often used by Europeans for the former island.

(10) TAFABI is an extinct volcano with an elevation of 3,000 feet, a cone-shaped and very rocky island containing one small village. Tafa'hi was the first part of the whole group seen by Europeans, the Dutch voyagers, Schouten and Lemaire, in 1616. They called Tafa'hi Cocos Island because of its trees, and Niua Tobutabu Traitors' Island because of the treacherous attack made on them by Ma'atu and his people.

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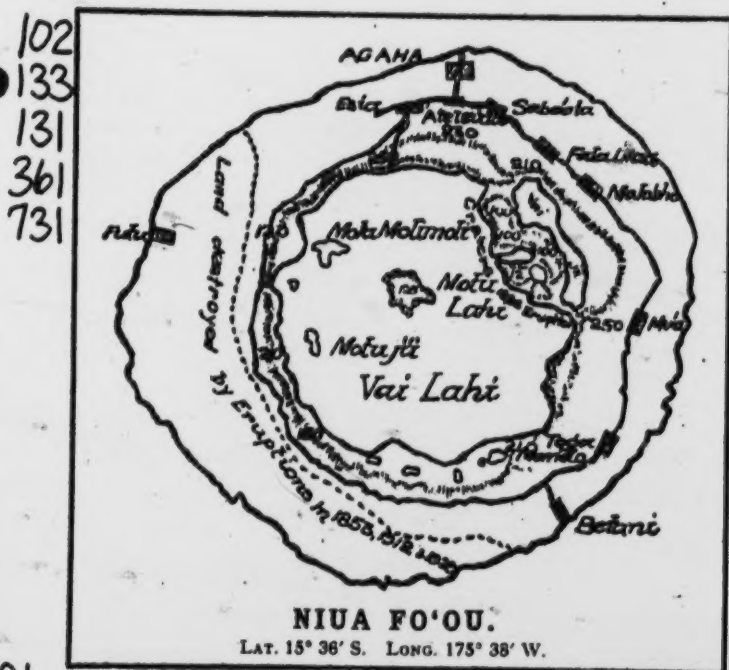
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- 131 (11) NIUA FO'OU is the most remote island of the group, being much closer to Samoa and Fiji than to Togatabu. It is 109 miles W.N.W. of Niua Tobutabu and 211 miles N.W. of Vava'u. Niua Fo'ou is almost circular and is 19 square miles in extent, including the lakes which cover six square miles. It rises to 588 feet and has a dangerous, dormant volcano whose more recent eruptions have occurred in 1853 (when 25 people were killed), in 1867, 1886, 1912 and 1929. The village of Ahau was destroyed in 1853 and Futu in 1929, and both sites have been abandoned.

[166] The last eruption is typical. On 25th July, 1929, a line of small craters opened up across the island on the western side, from the south-west coast to the north-west; these craters were so close that they formed almost a continuous line. Lava flowed down the western slopes to the sea, destroying nearly every building in Futu, and covering 2,000 acres which will be useless for cultivation for many years. The harbour at Futu is now cut off by the great lava-field. The people of Futu barely escaped with their lives and lost all their goods. They have since built a new village not far from Agaha named 'Alele'uta.

133 There are little islands in the lakes of Niua Fo'ou and little craters in those islands also. In some places in the lakes hot springs have been found, and in others the depth cannot be ascertained.

000 American and New Zealand astronomers observed the total eclipse of the sun at Niua Fo'ou on 22nd October, 1930.

Coral Islands.—Scenic and Historic Places.

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Disastrous hurricanes frequently occur, and the island has been ravaged as recently as December, 1930, February, 1931, and March, 1932. During the hurricane season Niua Fo'ou is not visited by small craft. Though the island has been so repeatedly devastated by eruptions and storms, and its condition seems to be more dangerous than that, for instance, of the uninhabited large island of Tofua, still there is no intention of abandoning it for a safer home closer to the main islands of the group.

Its present population is 1,291. The inhabitants are a distinct type, with local variations of the Tongan language due to ancient contact with Samoa and Uvea, but more intercourse with the rest of the Tongan group is causing these old words to fall into comparative disuse.

The "Tin-can Mail" is Niua Fo'ou's claim to distinction. As the harbour at Agaha is inconvenient, and the sea is generally too rough for canoes, the mail is taken by swimmers to the steamer which passes from Samoa to Fiji. The outgoing mail is generally wrapped in oiled paper and tied to sticks, and the inward mail is brought back from the steamer in a sealed tin-can.

THE CHIEF CORAL ISLANDS,
WITH SCENIC AND HISTORIC PLACES.

'EUA. This island, which is of great age geologically, reaches a height of 1,078 feet, and has an area of 33 square miles. Although it is as large as Vava'u and contains fertile soil in abundance, its population of 348 is most disproportionate. Its inadequate harbour at 'Ohonua and the sometimes dangerous channel between the island and Togatabu, though disadvantageous to the progress of 'Eua, do not really explain the decline in its population; this is due rather to the proximity of Nuku'alofa with its attractions. Considering that many small islands in Ha'abai support numerous taxpayers who have no allotments, the neglect of 'Eua is regrettable.

'Eua was called Middelburg by its discoverer, Tasman, and Cook had a high opinion of its beauty and fertility. This island is unique in several respects. It has several small creeks which rise from springs in the hillsides and descend to the western shore;

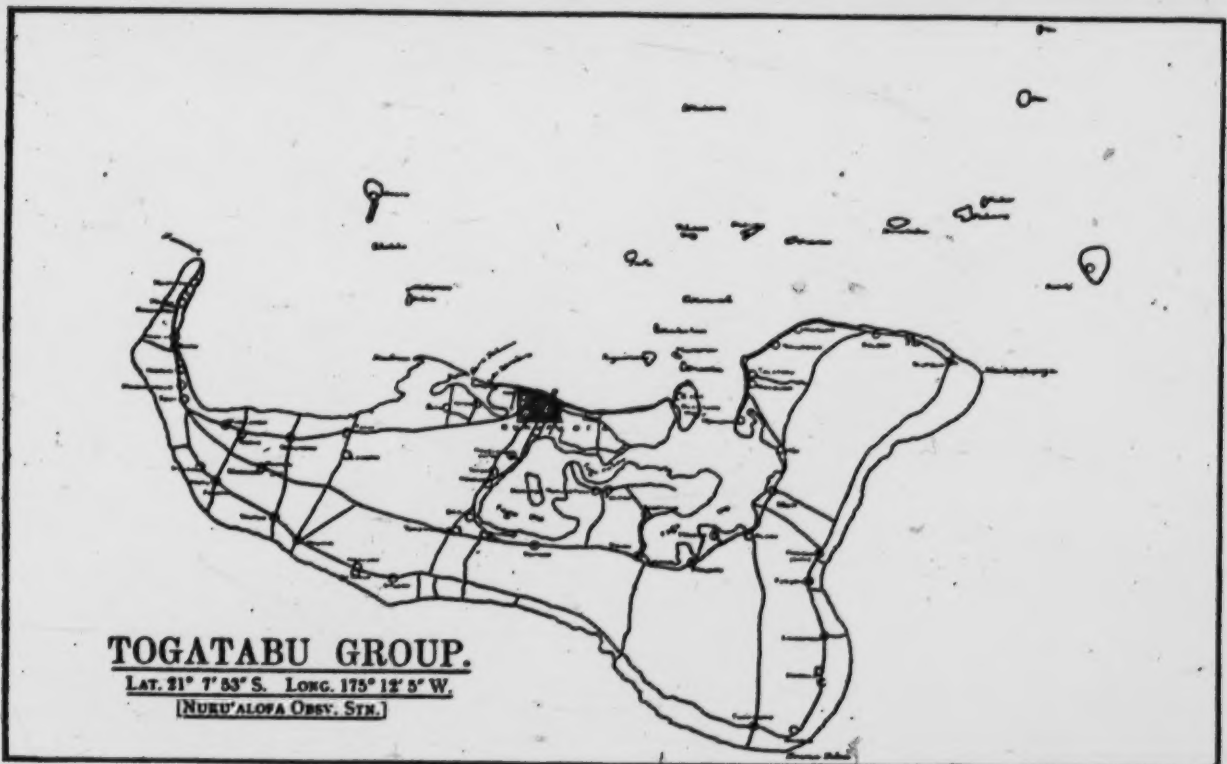


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87: Wood M,Y-4,S (no date) 1932 OUG Tonga OUG

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Togatabu Group.



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and mobs of untended horses roam through the island. It contains varied scenery, valleys, and precipitous cliffs lining the eastern coast.

TOGATABU. This name (Sacred Tonga), as well as the others used by the people (Great Tonga and Chiefly Tonga), attests the importance of the largest island in the minds of generations of Tongans. From the foundation of Tonga to the present it has been the residence of the kings and the centre of religious and social life, and modern investigation has confirmed the native tradition that Togatabu was settled before Ha'abai and Vava'u. The island is 99 square miles in extent, with its extreme length 18½ miles and greatest breadth 9 miles. The southern coast is rather higher than the northern, where the capital, Nuku'alofa, is situated opposite the only openings in the reef which surrounds the island; but Togatabu generally is low, except in the east where the land rises to 270 feet. There are three main roads traversing the island from west to east and several cross-roads. The present population is 12,357, of whom 11,660 are pure Tongans.

Nuku'alofa is the capital, the residence of the sovereign, and the centre of government and trade for the whole group. The Palace and Royal Chapel are conspicuous buildings; and the royal dais in the chapel is finely carved. The tombs of the present line of kings are at Mala'e-kula, in the centre of the town. Behind the British Consulate is a hill (Zion), the site of the old fort described by Mariner.

Mu'a, which consists of two villages, Tatakamotoga and Labaha, was the ancient capital; the kings of the Tu'i Toga line after Tu'itatui resided at Labaha, as also did the Tu'i Ha'atakalaua, and the southern village of Tatakamotoga belonged to the Tu'i Kanokubolu. In Mu'a there was also a renowned enclosure, Fanakava, which was a sanctuary for refugees from justice. The most remarkable feature of the Mu'a district is the series of 28 tombs (lagi) of the ancient kings. Each of these is a rectangular structure, covering as much as three-fourths of an acre with from three to five terraces in pyramidal form, built of blocks of stone the largest of which weigh 30 tons each. Many of these tombs are well-preserved and easily accessible, especially the Baebae of Tele'a, whose smooth surfaces and L-shaped corner-stones have won the admiration of experts. Such striking examples of the skill of ancient Tongan stonemasons afford one of the finest sights in the South Seas.

At the extreme east of the island, at Heketa near Niutoua, there is situated the famous trilithon known as the Ha'amoga-'a-Maui. This was built by the Tu'i Toga, Tu'itatui, about the year 1200, probably as a gateway. The upright stones are 17 feet high, and the cross-piece is 19 feet in length. Nearby are the stone where Tu'itatui sat, the Maka Fakinaga, and two tombs from the same period.

The remains of "Captain Cook's tree," called Malumalu 'o Fullagi by the people, may be seen at Alaki. It was here that Cook was entertained in 1777 when he visited the Tu'i Toga and saw the presentation of first-fruits.

Stalactite caves near Haveluliku on the southern coast, like those found in other parts of Tonga, seem to have been used for burials in ancient times.

Ha'ateiho is the place where three London Missionary Society missionaries were killed in 1799. At Bea may be seen the spot where Captain Croker was killed and three naval guns were captured in 1840. 648
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There is a good example of an old fort in fair preservation at Hule, near Nukunuku. The most remarkable of the numerous trenches of the island is known as the Keli'-a-Bel'hake, which extends from Vaotu'u to Nukunuku, Te'ekiu, Masilamea, and back to the southern coast at Fahefa; tradition states that this was actually dug in a single night during a war between the men of Hahake and those of Hihifo led by Vaha'i, at some undetermined time probably in the early 19th century. The name of a hamlet, 'Umutagata, also in the western district, recalls a rare instance of human cremation and cannibalism. 712
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At Kolovai there is the enclosure where the former Tu'i Kanokubolu were invested with office; a piece of the koka tree under which these kings sat has been placed in the modern coronation chair at Nuku'alofa. The tombs of these kings are also at Kolovai. This village is well-known to tourists as a sanctuary for great numbers of flying-foxes. 643
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Houma, on the south-west coast, is noted for the blow-holes which extend along the cliffs for a considerable distance. 133

In the extreme north-west of the island, at Ha'atafu, a monument stands to mark the landing-place of the first Wesleyan missionaries (1826). Tasman in 1643 and Cook in 1773 also landed nearby. 648
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Navigation lights now stand at Ha'atafu, Nuku'alofa and Malinoa, an island north of Nuku'alofa. The quarantine station is situated at Makaha'a, another island off Nuku'alofa. 502
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Ancient stone-quarries are to be seen at Motutabu and Bagaimotu, small islands not far from Nuku'alofa. It seems more than probable that the stones used in the great tombs (lagi) at Mu'a and elsewhere were cut at these places, and certainly not at Uvea and other distant islands to which old native traditions refer. 316
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HA'ABAI. It is considered that this name is derived from Savai'i, the island in Samoa from which the ancient Tongans probably came. Ha'abai is a scattered archipelago of small islands, the total area of which is less than that of 'Eua, if the uninhabited volcanic islands of Tofua and Kao are excluded. Yet these islets support a population of 6,410, most of whom have small tax-allotments or none at all, and despite the difficulties of getting a livelihood—difficulties which hurricanes and droughts have increased in recent years—the number of people who have gone to take up land in Togatabu and Vava'u is not considerable. The people of Ha'abai have always been renowned as skilful navigators and fishermen. 103
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The Governor of Ha'abai resides at Bagai, Lifuka, which was also the boyhood home and always the favourite residence of Tubou I. Cook was entertained at a great festival and a plot was made against his life on this island in 1777. Mariner's vessel, the "Port-au-Prince," was also attacked here, and the cemetery of the murdered sailors is at Koulo, Lifuka. 634
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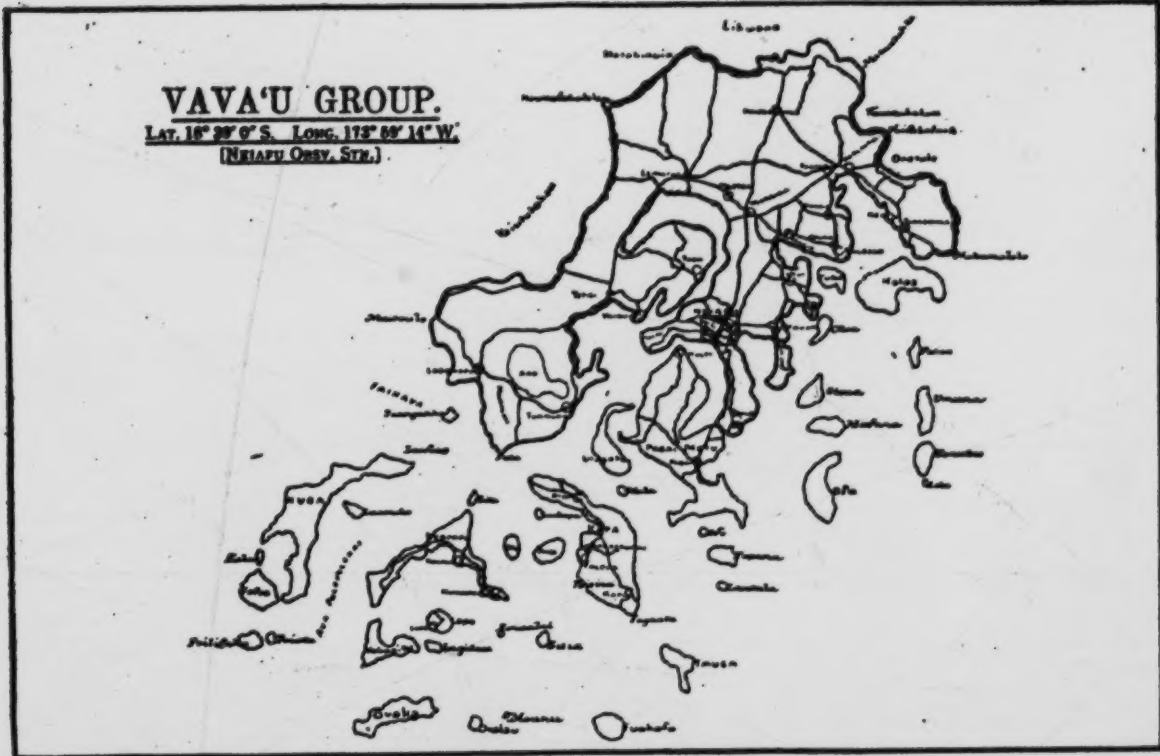
Uoleva, now uninhabited, has a remarkable number of pigeon-mounds used by chiefs in ancient times, also an old sunken road of unknown use extending through the island. 172

87: Wood M,Y-4,5 (no date) 1932 OUG Tonga OUG

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Vava'u Group.

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Coral Islands.—Scenic and Historic Places.

83

'Uiha is the burial-place of great chiefs, including Tubouniua, Tubouto'a, Tevita 'Uga and Vuna. The finest mound ('eji) in Tonga, named Maka Hokovalu, is situated on the north-west of this island. The village of 'Uiha also boasts six cannon taken from a kidnapping ship which met its merited doom while making a raid on the island about the middle of the 19th century.

Tugua was the residence of the highest personage in ancient Tongan society, the Tamaha.

Nomuka, in the south of the group, was visited by more voyagers than any other island in Tonga. The pond of fresh water from which Tasman, Cook, Bligh and others took supplies is readily pointed out.

Navigation lights have been placed at Muifuiva, in the south, and at Mutoa, Ha'ano, in the north of Ha'abai. Some islands cannot be approached in bad weather. Many of the smallest ones are uninhabited, though there are various traces of former habitation or of use for plantations or burial-places at Ofolaga, Kelelesia and the 'Otu Tolu.

VAVA'U OR HA'AFULUHAO. Three-fifths of this beautiful northern group is in one island, 'Uta Vava'u, but the remaining islands are only separated from the mainland by narrow channels. All these islands are comparatively high and undulating, thickly-wooded and very fertile. The highest point is 670 feet. From the hill called Talau, behind the chief town, Neiafu, a magnificent panorama can be obtained, embracing all the islands in the group. Along the northern coast of the main island there are very fine views from the high cliffs at the seat ('eji) of Salote near Hologa and at Ha'alaufuli.

The harbour of the main island is one of the most picturesque in the Pacific, though shallows and sandbanks make navigation difficult in some places. The Swallows' Cave, often visited by tourists, is on the north of Kaba. The secret cave, entered only by diving, which Mariner's story and Byron's poem have made famous, is situated on the north of the island of Nuababu; here the young chief left his bride until they could embark for Fiji and be safe from the wrath of their relatives.

Neiafu, the port and residence of the governor, is beautifully situated, and good roads radiate from this centre. Until recently at least the average prosperity of the natives in Vava'u was rather higher than in other parts of the group, and they have expended their resources on European houses and European food to a greater extent than elsewhere. Vava'u is not as subject to hurricanes as the more northerly islands of Niua Fo'ou and Niua Tobutabu, but nevertheless it has suffered rather frequently, the last occasion being 13th March, 1932.

It is remarkable that Vava'u was the last part of Tonga to be discovered, the honour falling to the Spaniard, Maurelle, in 1781.

Various places recall the incidents mentioned in Mariner's history, and especially Feletoa, where the great fight of Finau Uhukalala II took place and where Finau himself was buried in 1809. Parts of the great trench, and also a cave and underground river, may be seen at Feletoa.

An ancient but incredible tradition states that a long wall of coral stones at Makave, known as the Kilikilitefua, was made by casting a stone for every first-born son in the district.

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for every first-born son in the district. This wall stretches across an isthmus for 250 feet, with a thickness of 6 feet at the base and greatest height of 5 feet.

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The great tomb (lagi) of Talafaiva, the beautiful wife of the illustrious Tu'i Toga, Tele'a, is on the island of 'Euakafa, in the south of Vava'u.

CAPES, BAYS, STRAITS AND REEFS.

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The chief capes in Togatabu are Niu Aunofu or Van Diemen Pt. in the north-west, Houma Toloa or Cook Pt. in the south, and Mui Hobohoboga or East Cape. In Lifuka, Ha'abai, the capes are Hulu'ibaogo in the south-west (where Cook saw a mound named Ta'agakiki, now the site of a cemetery) and Muikuku in the north-west where Cook anchored and also where the "Port-au-Prince" was attacked. The chief capes of 'Uta Vava'u are Muioulo, Fata, Muioulo, Muikilikili, Nukumalolo, Vaifakalava, Tubouniua, Mata'utuliki, Matakiniua and Houma Fakalele.

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The anchorage on the western shore of 'Eua was named English Roads by Cook. Maria Bay in the north-west of Togatabu was named by Tasman after Maria Van Diemen. In the lagoon of Togatabu, Faga Kakau and Faga 'Uta are sometimes marked as Bay of Bea and Bay of Mu'a. Port Maurelle in Kaba, Vava'u, commemorates the name of the Spanish discoverer. Boatalefusi is the local name of the far-famed harbour of Vava'u. Other bays in Vava'u are Port Refuge, Vaiutukakau, Liku'one and 'Onetale.

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The chief straits or passages in Togatabu are Biha or Eastern Passage, Ava Lahi and Egeria Channel. Of the numerous straits marked on Ha'abai charts the most important are Ava Auhagamea, Ava Vaha'afonua and Ava Matanukubule. The chief channels in Vava'u are Ava-Bulebulekai and Faihava.

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Pelorus Reef, south of 'Ata, was discovered by H.M.S. "Pelorus" in 1861; it marks the southernmost extremity of Tongan waters. North-west of Togatabu are Hakau Tabu, where only the fishermen of the Tu'i Kanokubolu were allowed to fish, and Hakau Mama'o. West of Nomuka is Hakau Fiji, where a large steamer was wrecked in 1924. Hakau Muikuku, Hakau Faka'ojitoume and Luahoko are the most well-known of the innumerable reefs of Ha'abai.

MOUNTAINS.

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The list of islands in Appendix E shows their heights. A Few hills are high enough to deserve names. The most important of these in Vava'u are Mo'ugalafa (610 feet), Talau (430 feet) and Kasoa (430 feet), and in Kaba the hill Teisina (310 feet). Two small hills in Togatabu have names: Bobua or Holohiufi or Cook's Hill (108 feet), near Ma'ofaga, said to have been cast down from the sky by Tagaloo 'Eitumatubu'a to provide good soil for the garden of his son, 'Aho'eitu; and Veigo or Fugajia or Zion (60 feet), the site of the old fort and latterly of a church overlooking Nuku'alofa.

A [See Category 133, pp. 95-107—Analyst.]

VOLCANOES.

133

The active volcanoes are Tofua and Fonua Fo'ou (Falcon Island), which have been described. Niua Fo'ou erupts every few years and is classed as dormant. Late and Fonualei may be called dormant, though many years have elapsed since they last erupted. 'Ata, Huga Ha'abai, Huga Toga, Kao and Tafahi are quite extinct. Submarine eruptions have been reported in recent years south-west and north-west of Togatabu, between 'Ata and Huga Toga.

LAKES.

In the craters of Tofua and Niua Fo'ou there are fairly large lakes, the lake in Tofua covering over three square miles, and those in Niua Fo'ou totalling six square miles. There is a shallow, salt lake or lagoon in Nomuka, 443 acres in extent; this lake is remarkable for its fish ('ava) which remain fresh for two or three days. There is also a small and fairly shallow lake in south-west Vava'u.

Except small creeks which flow from springs in 'Eua, and one in Niua Tobutabu, there are no rivers in the Tongan group, owing to the islands being small and mostly flat. Consequently, there is no wild animal life, and birds are comparatively few. [136]

CLIMATE, ETC.

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The climate of Tonga is semi-tropical and not as hot as Fiji and Samoa. Nevertheless, in midsummer the humidity is fairly severe, especially in the northern islands. Cool nights are generally experienced in Togatabu and 'Eua, and, compared with conditions in many other Pacific Island groups, the climate throughout Tonga is healthy.

The rainfall is fairly heavy, but much less than in Fiji and Samoa. The wet season is from the end of December to April; short but injurious droughts are sometimes experienced, more especially during the period October–December. The soil on coral islands is very porous, and water can be obtained by digging wells, but under modern conditions the people rely entirely on cement cisterns for drinking purposes. [731] 312

Systematic meteorological records have been taken at Nuku'alofa only during the last six years (a comparatively dry period), and these include the following:— 132

Temperature:	Maximum,	90.4 degrees (January, 1930).
	Minimum,	51 degrees (July, 1930).
	Mean,	74.6 degrees.
Humidity:	Maximum,	100% on several occasions.
	Minimum,	49%
	Mean,	76.9%
Annual rainfall:	Maximum,	74.39 inches (1927).
	Minimum,	40.66 inches (1930).
	Mean,	62.9 inches.

Greatest number of days on which rain fell in one year: 193 (1927).

Least number of days on which rain fell in one year: 153 (1930).

Most rain in any 24-hour period: 8.52 inches (June, 1931).

132 The prevailing winds, which considerably temper the heat, are the South-East Trade Winds. The ocean-currents are also from the south-east; interesting proof is found in the fact that wreckage from the steamer "Tahiti," which foundered about 500 miles south-east of Togatabu in August, 1930, had drifted to the east coasts of Vava'u and the Ha'abai islands by the following December.

132 Hurricanes are seldom experienced in Togatabu, but they sometimes occur in the northern islands where they work great havoc to plantations and buildings. The most disastrous hurricanes of recent years happened in 1912 and 1913 in Vava'u and Ha'abai. Niua Fo'ou was ravaged by successive blows in December, 1930, February, 1931, and March, 1932, and the hurricane of December, 1930, destroyed almost every house in Niua Tobutabu.

731 Earthquakes are fairly common but are not severe, as a rule. Instances of damage caused by tidal waves accompanying shakes are recorded in some places such as Lifuka and 'Uiha, low islands of Ha'abai.

ANIMALS AND PLANTS.

136 Pigs, fowls and rats seem to have been brought to Tonga many centuries ago; as already noticed, Tasman, Cook and other voyagers exchanged iron goods for pigs and fowls. Hunting rats was a favourite sport of the chiefly archers in former times. Pigs and fowls still form the only meat-diet of the village-people. Their gardens are often spoiled by roving pigs; and these creatures infest some uninhabited islands such as Tofua, while the distant island of 'Ata swarms with fowls. Snakes are unknown, but there are several varieties of lizard, including a green lizard (fokai). There are numerous insect pests, such as centipedes and mosquitoes.

231 Europeans have introduced horses, cows, goats, turkeys, etc. Cook presented the first horses, cows and sheep to Bau, Maaliuaki and Finau in 1777; the cattle were called Cook's "pigs" (buaka Tute) by the natives, a circumstance which has given rise to the fiction that Cook brought pigs to Tonga. These islands are not very suitable for sheep.

Government statistics show the following animals in Tonga in 1931:—7,467 horses, 1,661 cattle, 7 sheep, 18,231 pigs, 4,028 dogs, and 2,148 goats.

136 In 'Eua there is a green parrot which will not breed if taken elsewhere. Probably the strangest bird in the group is the megapodius (malau) at Niua Fo'ou which flies badly and leaves unusually large eggs to be hatched in the sand; this bird is also found in the Solomon Islands but nowhere between that group and Niua Fo'ou. The tavake is a bird whose blood-red tail-feathers were worn only by chiefs. As previously stated, the absence of running water accounts for the rather small number of birds in the group.

Reference has already been made to the large number of flying-foxes which find sanctuary at Kolovai, in Western Togatabu.

226 The sea everywhere abounds in fish, and sharks are plentiful. The people are expert fishermen, but of all their methods none is stranger

APPENDIX E.

A COMPLETE LIST OF THE ISLANDS AND VILLAGES OF TONGA.

NOTE. All islands are classed as of coral formation, except those marked (V) denoting volcanic origin.

The heights of the low islands are approximate only, as indicated from charts.

Particulars of population are from the Police Census of 27th April, 1931.

Island.	Height (in ft.).	Area (in acres).	Villages.	Estate (Tofa).	Population.
(1) 'ATA (V) [PYLSTAART].	1,165	560			
(2) SOUTHERN GROUP:					
TOGATABU AND 'EUA.					
'Eua	1,078	21,604 (33.7 sq.m.)	'Ohonua Houma Bagai Kolomaile (Ha'atua) Tufuvai	5 Government Royal Estate Ve'ehala Government Government	348 193 37 31 55 32
Togatabu	270	63,516 (99.2 sq.m.)	22 in the Eastern Division: Niuatoua Afa Kologa Manuka	60 Government Government Nuku Government	12,357 141 64 330 38

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High, Area, Villages and Population of Islands.

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87: Wood M,Y-4,5 (no date) 1932 OUG Tonga OUG

Island.
SOUTHERN GROUP: TOGATABU
(continued).

APPENDIX E (CONTINUED).

Height *Area*
(in ft.). (in acres).

Villages.
Navutoka
Talafo'ou
 and Makauga
Nukuleka
Hoi
Taliasu
Mu'a { Labaha
 { Tatakamotoga
Alakifonua
Hologa
Malabo
Fua'amotu
Nakolo
Ha'asini
 and Hamula
Lavegatoga
Fatumu
Havehuliku

26 in the Central Division :
Vaini
Logoteme
Folaha
Nukuhetulu
Veitogo
Ha'ateiho
Bea

Estate (Tofia). *Population.*

Tugi	161
Lauaki	
Jioeli Bagia	235
Jioeli Bagia	103
Jioeli Bagia	125
Tu'ilakeba	50
Jioeli Bagia	505
Tugi	575
Tu'ibelehake	164
Government	147
Luani	103
Tugi	270
Luani	89
Government	
Jioeli Bagia	171
Tugi	31
Tugi	108
Tugi	29
Ma'afu	254
Veikune	113
Government	210
Government	94
Government	224
Tu'iha'ateiho	159
Lavaka	167

96 *Height, Area, Villages and Population of Islands.*

87: Wood M,Y-4,5 (no date) 1932 009 Tonga 009

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Island.
SOUTHERN GROUP: TOGATABU
(continued).

APPENDIX E (CONTINUED).

<i>Height (in ft.).</i>	<i>Area (in acres).</i>	<i>Villages.</i>
		Tokomololo and Fonogahina
		Koloua
		and Tofoa
		Haveluloto
		Nuku'alofa { Kolofu'ou
		{ Kolomotu'a
		Ma'ofaga
		Hofoa
		Buke
		Fatai
		and Matafonua
		Nukunuku
		Vaotu'u
		Lakeba
		Houma
		Ha'akame
		Ha'alalo
		and Utulau
		12 in the Western Division :
		Matahau
		Fahefa
		and Ha'a'utu
		and Kala'au
		Te'ekiu
		Masilamea

<i>Estate (Tofa).</i>	<i>Population.</i>
Ma'afu	
Lasike	165
Government	
Government	76
Fielakeba	85
Government	1,555
Government	1,791
Fakafanua	633
Government	129
Fohe	50
Government	
Tu'ivakano	195
Tu'ivakano	382
Tu'ivakano	175
Lasike	92
Vaea	427
Government	119
Crown Prince	
Crown Prince	156
Tu'ivakano	110
Ve'ehala	
Government	
Government	167
Motu'abuaka	106
Government	76

Height, Area, Villages and Population of Islands. 97

87: Wood M,Y-4,5 (no date) 1932 OU9 Tonga NU9

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APPENDIX E (CONTINUED).

Island.	Height (in ft.).	Area (in acres).	Villages.	Estate (Tofia).	Population.
SOUTHERN GROUP: TOGATABU (continued).					
Nukunukumotu		326	Fo'ui	Vaha'i	187
'Eua Iki ('Eueiki)	180	260	Ha'avakatolo	'Ahome'e	139
Atata	93	128	Kolovai	Ata	334
Tufaka	61	4½	'Ahau	Govt. and Lasike	134
Alakibcau	60	2	Kanokubolu (Neiafu)	Royal Estate	162
Bolo'a	77	12	Ha'atafu	Government	100
Malinoa	51	2		Government	26
Fafa	72	23	Siesia	Government	76
Velitoa (2)	59	5	'Eueiki	Ata	50
'Onevai	54	25	Atata		
'Onevao	57	6½			
Motutabu	74	33			
Makaha'a	65	9			
Monuafe		5			
Bagaimotu		33			
Manima	47	4			
'Oneata	87	14			
Mata'aho					
Kanatea		126			
Mo'ugatabu					
Gofonua					

APPENDIX E (CONTINUED).

Island.	Height (in ft.).	Area (in. acres).	Villages.	Estate (Tofia).	Population.
SOUTHERN GROUP: TOGATABU (continued).					
'Atā		55			
Fukave		43			
Nuku		10			
Tau	30	5			
Toketoke					
Kalau	120	50			
(3) HUGA TOGA (V).	490	110			
HUGA HA'ABAI (V).	400	160			
(4) MIDDLE GROUP: HA'ABAI.					
(A) VOLCANIC GROUP.					6,410
Falcon Island (V) [Fonua Fo'ou]	365				
Tofua (V)	1,670	13,750 (21.4 sq.m.)			
Kao (V)	3,380	3,100 (4.8 sq.m.)			
(B) 'OTU TOLU GROUP.					
Telekitoga	53	110			
Telekiha'abai (Lalona)	67	70			
Telekivava'u	71	50			
(C) MU'OMU'A OR NOMUKA GROUP.					
Nomuka	166	1,763 (2.7 sq.m.)	Nomuka	Crown Prince	478

Height, Area, Villages and Population of Islands.

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87: Wood M.Y-4,5 (no date) 1932 009 Tonga 009

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APPENDIX E (CONTINUED).

Island.	Height (in ft.).	Area (in acres).	Villages.	Estate (Tofia).	Population.
MU'OMU'A OR NOMUKA GROUP (continued).					
Mago	141	130	Mago	Royal Estate	63
Fonoifua	67	40	Fonoifua	Tu'iafitu	31
Nomuka Iki	147	167			
Mago Iki	68				
Fetokobuga	57				
Tonumea	138	30			
Nukufaiau	58	3			
Muifuiva	10	1			
Kelelesia	123	30			
Tano'a	57	3			
Nukutula	18	20			
(D) SOUTHERN HA'ABAI: - LULUGA OR WESTERN GROUP.					
Ha'afeva	100	500	Ha'afeva	Tu'uhetoka	375
Kotu	120	40	Kotu	Government	110
Tugua	120	375	Tugua	Tu'iha'ateiho	228
O'ua	140	240	O'ua	Government	142
Matuku	100	83	Matuku	Tu'iha'ateiho	80
Butubutua	12	3			
Teauba	125	50			
Fetoa	125	40			
Kolo	50				
Kito	60	3			

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Height, Area, Villages and Population of Islands.
87: Wood M.Y.-4,5 (no date) 1932 009 Tonga 009

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APPENDIX E (CONTINUED).

<i>Island.</i>	<i>Height (in ft.).</i>	<i>Area (in acres).</i>	<i>Villages.</i>	<i>Estate (Tofa).</i>	<i>Population.</i>
SOUTHERN HA'ABAI: LULUGA OR WESTERN GROUP (continued).					
Foua	30	1			
Luanamo	75	6			
Fonuaika	65	5			
Tokulu	15	3			
Kogaloto	20				
Fakahiku	65	3			
Bebea	75				
Ono Iki	125				
Fono'imaka	6				
Lekeleka	60	30			
(E) NORTHERN HA'ABAI: HAAKE OR EASTERN GROUP.					
Lifuka	100	2,825 (4.4 sq.m.)	Bagai Togaleleka (Hihifo) Holobeka Koulo (Ha'atakalaua) Lotofoa Fagale'ouga Fotua (Alakifonua) Faleloa Lotoha'ano Muitoa Bukotala (Kanakana) Fakakakai	Royal Estate Government Tu'iafitu Government Royal Estate Niukabu Tu'ibelehake Tuita Tu'iha'agana Tu'iha'agana Tu'iha'agana Government	844 607 104 196 308 138 175 286 296 120 198 358
Foa	100	3,310 (5.1 sq.m.)			
Ha'ano	100	1,626 (2.5 sq.m.)			

Height, Area, Villages and Population of Islands.

87: Wood M,Y-4,5 (no date) 1932 009 Tonga 009

102 Height, Area, Villages and Population of Islands.

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APPENDIX E (CONTINUED).

Island.	Height (in ft.).	Area (in acres).	Villages.	Estate (Tofa).	Population.
NORTHERN HA'ABAI: HAHAKE OR EASTERN GROUP (continued).					
'Uiha	100	1,326 (2.07 sq. m.)	'Uiha	Malubo	488
Lofaga	150	360	Felemea	Government	257
Fotuha'a	200	280	Lofaga	Crown Prince	252
Mo'uga'one	100	285	Fotuha'a	Government	126
Niniva	85	122	Mo'uga'one	Government	150
Ofolaga	90	220			
Buhi	20				
Luahoko	45	3			
Nukunamo	50	78			
Uoleva	100	741			
Luagahu	40	15			
Tatafa	90	78			
Tofoga	40				
Limu	40	10			
Uonuku Hahake	50	120			
Uonuku Hihifo	50	25			
Meama	105	5			
Nukubule	60	8			
Hakau'ata	60				
Fatumanogi	10				

Height, Area, Villages and Population of Islands. 103

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APPENDIX E (CONTINUED).

Island.	Height (in ft.).	Area (in acres).	Villages.	Estate (Tofa).	Population.
(5) NORTHERN GROUP:					
VAVA'U OR HA'AFULUHAO.					7,643
'Uta Vava'u	670	22,179 (34.6 sq.m.)	22		
			Nciafu	Government	1,610
			Falaleu	Government	198
			Fugamisi	Government	73
			Toula	Government	104
			Makave	Tu'iafitu	156
			Utui	'Ahome'e	73
			Magia	Government	44
			Houma	Government	128
			Ha'akio	Government	111
			Ta'anea	Vaha'i	176
			Ha'alaufuli	Afu	344
			Tu'anekeviale	Government	225
			Mataika	Government	217
			Feletoa	Fulivai	208
			Leimatu'a	Fotu	465
			Hologa	Royal Estate	241
			Taoa	Crown Prince	164
			Vaimalo	Government	103
			Tefisi	Luani	
			and Ga'akau	Fakafanua	208
			Logomabu	Veikune	208
			Tu'anuku	Finau Ulukalala	257
Ovaka	190	320	Ovaka	Government	186

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Height, Area, Villages and Population of Islands.

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APPENDIX E (CONTINUED).

Island.	Height (in ft.).	Area (in acres).	Villages.	Estate (Tofia).	Population.
NORTHERN GROUP: VAVA'U OR HA'APULUHAO (continued).					
Tauga	155	90	Tauga	Akau'ola	110
Huga	245	1,160	Huga	Fulivai	228
Nuababu	210	660	Nuababu	Royal Estate	103
			Matamaka	Royal Estate	74
Labe	130	99	Labe	Government	26
Bagaimotu	290	2,188	Bagai	Royal Estate	250
		(3.4 sq.m.)	Utulei	Royal Estate	104
Utugake	290	230	Utugake	Tuita	170
			Ga'unoho	Government	78
Kaba	345	1,475	Falevai		
		(2.3 sq.m.)	and Vakataumai	Fakatulolo	192
			Otea	Government	173
			Kaba	Government	152
Koloa	160	555	Koloa		
			and Holeva	Government	145
Okoa		85	Okoa	Tu'ilakeba	124
'Olo'ua		120	'Olo'ua	Government	45
Ofu	110	310	Ofu	Tu'ilakeba	170
Late (V)	1,700	4,300			
		(6.7 sq.m.)			
Maninita	55	7			
Taula	55	10			
Luaafuleheu	60	15			
Luahiabo	55	12			
Luaivaha	65	1			

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APPENDIX E (CONTINUED).

Island.	Height (in ft.).	Area (in acres).	Villages.	Estate. (Tofia).	Population.
NORTHERN GROUP: VAVA'U OR HA'AFULUHAD (continued).					
Fua'amotu	135	60			
Fonua'one'one	75	25			
Fatumaga	85				
'Eueiki	175	45			
'Euakafa	270	128			
Mu'omu'a	135	10			
Fagasito	60				
Ovalau	110	23			
Mo'unu	3	2			
Bau	75	3			
Ta'uta	135	3			
Gau	90	8			
Luatafito	40	2			
Fonuafo'ou	25				
Fonua'uga	25				
Katafaga	96				
Sisia	110	23½			
Fonualei	80	3			
Fofoa	255	184			
Kalau	195	12			
Luamoko	230	34			
Luafatu	110	4			
Vaka'eitu	200	162			
Lagitan	130	20			
Tu'ugasika	225	17			

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APPENDIX E (CONTINUED).

Island.	Height (in ft.).	Area (in acres).	Villages.	Estate (Tofia).	Population.
NIUATOBUTABU (continued).					
Tafahi (V) [Boscawen]	2,000	822	Tafahi	Government	47
(7) NIUA FO'OU (V).	588	12,422 (19.4 sq.m.)	9 Agaha Mu'a Togamama'o Saba'ata Mata'aho Fata'ulua Betani Esia Futu (now 'Alele'uta)	Fotofili and Fujitu'a Fotofili Government Fujitu'a Royal Estate Government Government Government Tuita	1,291 213 129 141 127 105 146 128 140 162

127 of Overseas Surveys, was used in the construction of an
128 agricultural land use/vegetation map of Tongatapu and a
transect across the island. The agricultural land use/
vegetation map was constructed on a cellulose acetate
overlay using a photomosaic (46 photos). Most boundaries
were later field checked and verified or corrected as
necessary.

125 The transect across the island was constructed using
a single photo of a 2.04 mile (3.29 kilometer) strip be-
tween the windward south coast (the liku) and the northern
lagoon (Tahi Kele). The transect was drawn on an acetate
overlay and sectioned into 52 equal segments of approx-
imately 69 yards (63.3 meters) each. The entire length
of the transect was then paced, and at each 69 yard interval
the crop types, plant species, agricultural practices, and
elevation changes were recorded. The transect illustrates
133 the heterogeneity of the Tongan agricultural landscape from
137 the steep windward south coast, which is characterized by
littoral forest and savanna, to the low-lying leeward north
coast, which is characterized by swamp and mangrove forests.

125 Random ground reconnaissance surveys were made of
both the bush allotments ('api 'uta) and the town allot-
ments ('api 'kolo) to gather accurate statistical data on
[423] the nature of the agricultural system. The land tenure
[241] system in Tonga is ideally suited to a random sampling
survey because all of these allotments have been surveyed

CHAPTER II

PHYSICAL ENVIRONMENT

Geographical Setting

131 The Kingdom of Tonga is situated in the southwest Pacific Ocean some 450 miles (720 kilometers) east-south-east of Suva, Fiji and 1,200 miles (1930 kilometers) north-northeast of Auckland, New Zealand (Figure 5). The archipelago consists of approximately 150 small islands scattered over 20,000 square miles (52,000 square kilometers) of ocean. The islands, 36 of which are presently inhabited, range in size from small reef islets to the island of Tongatapu with an area of 99 square miles (257 square kilometers). The total land area for the entire archipelago is approximately 270 square miles (700 square kilometers). The capital city and main seaport of 361 Nuku'alofa is situated on the north coast of the main island of Tongatapu, on which more than 60 percent of the Kingdom's population live.

Geology and Physiography

133 The Tongan archipelago is among the arcuate islands that are related geologically to the Asian continental margins, rather than to the Pacific Basin to the east. The islands are situated near the outer edge of what is considered to be the most unstable portion of the earth's

TEXT CONTINUED ON PAGE 211

133 surface (Cumberland, 1961: 6). All of the islands in the archipelago, with the exception of Niuafo'ou, lie along the Tongan Ridge, which separates the relatively shallow northeast-trending Lau Basin from the very deep and narrow northeast-trending Tonga Trench. Niuafo'ou is situated 120 miles west on a separate small submarine ridge (Schofield, 1967: 1426).

Geologically, the islands can be divided into three groups: 1) raised limestone islands like Tongatapu and most of the major islands in the Ha'apai and Vava'u groups; 2) volcanic islands, some of which are still active, such as 'Ata, Tofua, Kao, Late, Niuafo'ou and Tafahi along the western edge of the archipelago; and 3) the islands of mixed limestone and volcanic origin, such as 'Eua and Niuatoputapu.

133 The focus of this study, Tongatapu, in its shallow
134 subsurface is composed of foraminiferous limestone of possibly Pliocene-Quaternary age which, based on the deepest borehole, is more than 150 feet (45 meters) thick (Pfeiffer, 1971: 5). Excepting limited areas of coral sand along the north coast, the limestone base is overlain by a veneer of clay ranging in depth from 3 to 14 feet (0.9 to 4.3 meters). This clay is apparently derived from the volcanic ash of an ancient volcano or volcanoes (now submerged) within 25 miles (40 kilometers) to the west of Tongatapu (Gibbs, 1967: 219). As a result of tilting,

133 Tongatapu is barely above sea level in the north, and rises very gradually towards the south, with the highest point being about 270 feet (85 meters) in the vicinity of Fua'amotu and Nakolo in the southeast. Most of the island is less than 60 feet (17 meters) above mean sea level.

In the north-central portion an extensive but shallow central lagoon, known as Fanga 'Uta or Tahi Kele, extends some four to six miles (6 to 10 kilometers) into the island. Around this lagoon and along the north coast of the island near the towns of Hofoa, Folaha, and Navutoka, there are low-lying swampy areas.

The upraised, windward south coast, or liku, has rugged limestone cliffs and terraces, ranging from about 20 to 150 feet (6 to 46 meters) in height. Along the south-western portion, there are extensive blow-holes caused by wave action on the porous limestone terraces.

The surface of the island is flat to gently undulating with only a few small hills rising above the surrounding terrain and no surface streams.

There are scattered reef islets, or motu, along the north coast and the entire island is surrounded by a broken fringing reef of variable width.

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[24] Owing to the absence of surface streams, subsurface hydrology is an important consideration. Some pumpwell irrigation is practiced and rainwater is collected in many storage tanks, but the main water sources are springs and wells.

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[312]

and wells. Studies indicate that: the ground water table is always considerably less than a meter above mean sea level and it oscillates only a few inches; the effects of tidal oscillation (1.3 meters) on the water table extend only a few hundred meters inland; and the depth of the water table beneath the surface ranges from a few meters near sea level in the north to about 46 meters in the southeast. Also, a comparison of determinations made in 1959 and 1965 indicates that the chloride content in most wells is increasing, possibly as a result of seawater influx due to an excessively high pumping rate (Pfeiffer, 1971: 6-14).

As stated by Pfeiffer (1971: 1): "For additional exploitation of groundwater, it is necessary to know the thickness of the freshwater lens lying above the brackish and salty water in the deeper subsurface."

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Climate

The island of Tongatapu is barely within the tropics, almost on the Tropic of Capricorn. The island is under the influence of the maritime tropical (MT) air of the Trade Wind belt and, according to Köppen's system, would be classified as having an Am climate.

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The following climatic description is based primarily on data from the government meteorological station in Nuku'alofa.

132 Temperature

Tongatapu experiences a mean annual temperature of 74°F (23°C) with only limited diurnal and seasonal variation. The mean diurnal temperature difference over a 22 year period (from 1949 to 1971) was only 11°F (6°C). During this time period, the following extremes were recorded: a high temperature of 89°F (32°C) on February 9, 1955; a low temperature of 51°F (10°C) on August 4, 1951; a high daily temperature range of 31°F (17°C) on January 22, 1971; and a low daily temperature range of 1°F (less than 1°C) on June 20, 1952.

[82] The seasonal temperature range is only 8°F (4°C), based on mean values of 70°F (21°C) for the coldest months (July and August). Tongans recognize a "warm or summer" season (faha'ita'u mafana) from November to April, and "cold or winter" season (faha'ita'u momoko) from May through October.

[133] There is little variation in temperature regimes for different stations throughout the island. As stated by Kennedy (1959: 19), "On winter nights, the temperature near Fua'amotu, 270 feet (83 meters) above sea level in the highest portion of the island, is (only) 2 to 3°F (1 to 2°C) lower than at Nuku'alofa (sea level)".

Air Movement

The prevailing winds are the trades which blow from the east and southeast with remarkable regularity through-

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311 associations on Tongatapu, has possibly the lowest agricultural potential.

Swamp Forest

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[133] Areas of swamp forest are found primarily in the low lying areas along the north coast, with particularly extensive concentrations near Navutoka, Polaha, and between Kolomotu'a and Fatai. These are characterized by hydromorphic soils which are inundated from time to time throughout the year due to the excessive rain and tidal oscillations. The type is characterized by an open to semi-closed forest with an understory of salt tolerant shrubs. The dominant trees in this type are: Excoecaria agallocha, Xylocarpus granatum, Hibiscus tiliaceus, Thespesia populnea, Lumnitzera littorea, Heritiera littoralis, Ficus prolixa, Inocarpus edulis, Psidium guajava, Pandanus tectorius and Rhizophora spp. In the more mesic areas, the predominant species are Xylocarpus orbiculatum, Macaranga harveyana, Santalum yasi, Grewia crenata, Rhus taitensis, Morinda citrifolia, Glochidion sp., Ficus sp., Hibiscus tiliaceus, Cerbera manghas, Syzygium dealatum, and Diospyros ferrea.

Throughout the swampy areas, the understory consists of Cyperus javanicus, Ischaemum murinum, Paspalum conjugatum, Eleocharis dulcis, Acrostichum aureum, Derris trifoliata, Vitex trifolia, Clerodendrum inerme, and

137 Psidium guajava. In the more mesic and open areas, the understory consists of Lantana camara, Indigofera suffruticosa, Psidium guajava, Stachytarpheta urticaefolia, Passiflora spp., Ipomoea spp., and Canavalia maritima. In both swampy and more mesic areas, exotics such as Lantana camara, Psidium guajava, and Stachytarpheta urticaefolia have become naturalized and constitute dominant species.

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[134] The areas covered by swamp forest have in some cases been reclaimed by diking and refilling and, owing to the high organic content of the soil, produce high crop yields if waterlogging can be avoided. Many bush and town allotments contain portions of this swamp forest and, in most cases, although considered marginal for farming, provide a source of many plant products used by the Tongan society.

Marshland

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[311] Marshland associations, very limited in extent, are found south of Polaha and in the area just west of
[133] Kolomotu'a and north of the village of Hofoa. These have standing water throughout most of the year; the water is sometimes brackish owing to tidal ingression. The predominant species in this association are Cyperus javanicus, Ischaemum murinum, Paspalum conjugatum, Coix lachryma-jobi, Eleocharis dulcis, and Jussiaea erecta, with scattered Psidium guajava, Lumnitzera littorea, Hibiscus tiliaceus and Excoecaria agallocha. Again, exotics such as Psidium

137 guajava and Paspalum conjugatum have become naturalized and
311 constitute dominant species. The areas in which this
[222] association occurs have no agricultural potential, unless
reclaimed. Such lands are presently being developed as
fish ponds.

137 Mangrove Swamp
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[133] Zones of mangrove swamp are found along the sheltered
margins of the north coast, extending from Kolovai in the
west to Navutoka in the east, and including areas surround-
ing Nuku'alofa and the interior lagoon. This association
consists of trees actually growing in salt or brackish
water on a muddy substratum below the limits of high tide.

Although it merges on its inner margins with representa-
tives of the swamp forest association, the mangrove swamp
is generally lower and more gregarious, composed largely
of only Rhizophora mangle, Rhizophora mucronata, and

311 Bruguiera conjugata. These areas have little or no agri-
313 cultural potential unless reclaimed, although valuable dyes,
timber, and firewood are obtained from the mangrove species.
A number of bush allotments have sections of mangrove swamp
and, with the shortage of timber trees, these swamps have
become the major source of firewood on the island.

137 Tropical Lowland Forest
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Presumably the entire well-drained central upland was
originally covered with dense tropical lowland forest.
Today, however, there are only remnants of primary forest.

TONGA

Chapter I.

TONGA IN PRE-CHRISTIAN TIMES

The Tongan people have preserved a rudimentary knowledge of their early history. This was transmitted to successive generations through poems, expressed in singing and festival dancing. With pride of race and tenacious memories the Tongans were able to recall the deeds of kings and other great chiefs that were celebrated in these poems. 173

The first of the line of sacred kings, the Tu'i Tonga, ruled about 950 A.D., and the names of all the kings in this line, thirty-eight in number, were orally recorded. For almost a thousand years Tongans served their chiefs, cultivated their soil, skilfully sailed the surrounding seas, and enjoyed the possession of their small islands undisturbed by contact with the outside world.

Tonga is the southern point of the triangle, Fiji-Samoa-Tonga. With a total area of only 269 square miles, this island-cluster seems to have had a stable population of from 18,000 to 25,000 in pre-European times. The three main sections are Tongatapu (with the capital, Nuku'alofa) in the south, Ha'apai (a scattered group of which the main island is Lifuka), and Vava'u (with its chief town, Neiafu) in the north. Tongatapu, or Sacred Tonga, was so called because it was regarded as the residence of the great gods.⁽¹⁾ The distance from Tongatapu to Vava'u is 170 miles. The islands run in two lines. The eastern line is of coral formation, nearly all being low islands. The largest island in the whole group, Tongatapu, 99 square miles, rises to only 270 feet. The western line consists of volcanic islands, mostly extinct and with few inhabitants now, except the far northerly islands of Niua Toputapu and Niua Fo'ou. 131
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Tongans are a branch of the light-brown Polynesian race; affinities of language and similar physical characteristics show their close relationship with Samoans, Maoris, Hawaiians, and the inhabitants of the many groups in Eastern Polynesia. "The greatest ocean pathfinders the world has known"⁽²⁾, the Polynesians are believed to have come from Asia, "pushed off the mainland of Asia".⁽³⁾ Approximate dates and the paths of these migrations are still the subject of inquiry and much debate.⁽⁴⁾ 144
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Tongan traditions firmly place Samoa as the land from which their ancestors finally migrated to their present home. These stories refer to the islands of Manu'a in the east of the Samoan group as the residence of the ancient chiefs who claimed descent from the sky-gods, the Tangaloa. Furthermore, it was from Manu'a that Maui, the mythical hero from the under-world, was said to have obtained the fish-hook with which he pulled up Tongatapu and other low islands in the Tongan group from the ocean-bed. The first Tu'i Tonga, 'Ahoaitu, was 173

- 131 the group, and a number of islets lying to the south and south-west
 (103) of it. Rather more than fifty miles to the south is the Hapai
 (133) group, containing the high volcanic islands of Tofua and Kao on the
 west; on the east a chain of low, flat, coral islets; the Kotu group
 in the centre; and on the south a number of isolated islands, the
 largest of which is Nomuka. Some fifty miles to the south and
 somewhat to the west of Nomuka lies Tongatabu, the largest island
 of the group, measuring over twenty miles in its longest diameter.
 (133) A channel about ten miles broad separates Tongatabu from the
 small and high island of Eua to the south-east, while eighty-five
 miles to the south-west lies the little island called Ata by the
 natives, the Pylstaart of the charts, the most southerly outlier
 of the Tonga Islands. (See Map on p. 584 and Pl. XXIII.)

Lying far to the north of the islands mentioned are Niuafoou
 (= Good Hope, or Proby Island), Keppel, and Boscawen Islands,
 which, though politically belonging to Tonga, occupy an inter-
 mediate position between this group, Fiji, and Samoa.

III. GEOLOGICAL CHARACTERS OF THE GROUP.

- 133 According to the characters which they present, the Tonga
 Islands may be arranged in three divisions, viz.:—(a) purely
 volcanic islands; (b) islands formed of volcanic materials laid out
 beneath the sea, and since elevated, with or without a covering of
 reef-limestones; and (c) islands formed entirely of reef-limestones.

(a) *The Volcanic Islands.*

- 131 The purely volcanic islands form a line running parallel to the
 133 long axis of the group, but a little to the west of it. The direction
 of this line is approximately N.N.E. and S.S.W.

At the southern end is the little island of Ata or Pylstaart,
 which, judging from the extremely steep and rugged outline that
 it presents, may possibly be a member of this series. I have,
 however, merely seen a photograph of the island, and it can therefore
 only provisionally be reckoned a member of the volcanic series.

The islands of Honga-tonga and Honga-hapai, lying north of
 the west end of Tongatabu, are I believe the fragments of an old
 crater. They stand out of the sea about a mile and a half apart,
 and reach a height of some 300 and 200 feet respectively. Each
 island has a high vertical face on the side turned towards the
 other, and on all sides hard black layers of rock are seen alternating
 with softer ones, and slope away from a point situated between the
 two islands.

Fifteen miles to the north of these islands is the recently-formed
 volcanic mound named Falcon Island.

- 133 In the year 1867, H.M.S. 'Falcon' reported a shoal in the position
 175 of the present island, and ten years later smoke was seen issuing
 from the sea at this spot by H.M.S. 'Sappho.' In October 1885, a
 submarine volcano suddenly burst into activity, and built up a

133 mound. The volcano was still in eruption the following year. In
175 1887 the height was estimated as 290 feet by a French man-of-war; and from a sketch taken in that year, it appears that the summit of the island presented a rugged, uneven outline*.

The 'Egeria' visited the island in Oct. 1889. In the four years that had elapsed since its formation, a large portion had been removed by the action of the sea. Only a part (perhaps one third) of the original wide-based mound remained. This was limited for half its circumference by a cliff which was highest in the middle (153 feet), where it faced south, and subsided gradually at either end. From the summit of the cliff the surface of the mound sloped evenly downwards until it reached the level of a wide flat marked by tidal ridges, which extended round that part of the circumference of the mound not limited by the cliff. Landslips from the cliff were of frequent occurrence at high water; as many as twelve were seen in one afternoon, and the ground round the edge of the cliff was traversed by concentric cracks, showing where slices had already become loosened preparatory to their descent. Capt. Oldham erected a line of cairns at equal distances, extending from the edge of the cliff—down the slope of the mound and over the flat—as a means of measuring the rate at which the island is reduced.

133 The mound consisted of layers of finely-divided volcanic ash. On the face of the cliff the layers were marked by the salts which had crystallized at the surface more abundantly in some than in others, and it might be seen that each layer was thickest at the highest part of the mound, and gradually thinned out towards the periphery.

Numbers of volcanic bombs were scattered over the slope of the mound, being largest and most numerous at the highest part. These appear to have been ejected at the close of the eruption, as none appeared in the cliff-section; and the even, unscored outline of the slope negatived the idea that they had accumulated at the surface by the removal of any considerable quantities of finer materials.

The lavas presented all stages of vesicular structure, and some of the bombs displayed a distinct spiral twist in the surface ridges.

Mr. Harker† has examined the lavas and finds that they are basic augite-andesites of specific gravity 2.703.

The temperature of the interior of the mound was still high at the time of our visit. In a hole 7 feet deep a thermometer rose to 100° Fahr., while it registered 77°·5 at the surface.

To the south of the island there was an extensive shallow area with 3 fathoms of water over it. It appears that this was, in part at least, occupied by that portion of the original mound which has

[013] * The above details are taken from an account of the island by Capt. Wharton, R.N., F.R.S., published in 'Nature' for Jan. 23, 1890 (pp. 276-278). This account is accompanied by figures and a map.

† Geol. Mag. for June, 1891, p. 250.

been removed by the action of the waves. Much of the material so removed has been thrown up on the north side of the island, forming the flat above mentioned, and an extensive shallow area beyond it.

It seems clear that unless another eruption occurs the island will in a short time be reduced again to the condition of a submarine bank formed of volcanic ashes rearranged by the action of the waves*.

It is remarkable that the depth of 1021 fathoms has been found between Falcon Island and Nomuka, the nearest of the Hapai Islands.

Next in the series come the high volcanic islands of Tofua and Kao. Tofua is a volcano in a state of intermittent activity. It is marked in the Admiralty chart as attaining a height of 1890 feet above the sea. The summit presents a fairly even outline when seen from a distance, and the sides slope steeply in all directions. The crater is situated on the northern side.

Kao is said to attain a height of over 3000 feet. It presents a singularly-perfect conical outline, from all points of view. It has not been in activity within the period of native tradition.

Continuing the line are Metis Island, which appeared a few years before Falcon Island, and is stated in the Admiralty chart to have been still in activity in 1886; and the volcano Lette, which is figured in the chart of the group (No. 2421). In 1866, when this island was visited by Lieut. Creak, R.N., in H.M.S. 'Esk,' vapour was seen issuing from the crater†.

To the north of Vavau is the volcano of Amargura. An explosion occurred in 1847, when the island was in part "destroyed by the eruption of its crater" and "ashes were thrown in large quantities on passing ships 500-600 miles to the N.E."‡.

Northwards the line passes through Boscawen and Keppel Islands, which lie close together, halfway between Amargura and Samoa.

Boscawen Island (= Niua-tabu-tabu) is described in Findlay's Directory as one entire mountain about 2000 feet in height "resembling the Moluccas;" it is therefore probably a volcanic island.

Niua-fou (or Good Hope Island), lying considerably to the westward of these islands, is probably a member of the same series. It is described as a volcanic island with black lava rocks all round the shores, and with a crater in the middle containing a brackish-water lake. An eruption occurred in 1853, when a village was destroyed and many lives were lost. Another eruption occurred in 1867§.

In the continuation of the direct line northward is the large volcanic island of Savaii, the most westerly of the Samoan islands. The Samoan volcanoes, however, form a series having a direction approximately W.N.W. and E.S.E., which crosses that of which the

* For a fuller account (with figs.) of the present condition of the island, see a paper by the present writer in Proc. Roy. Geograph. Soc. vol. xii. (1890) p. 157.

† Findlay, South Pacific Directory, 3rd ed. p. 456.

‡ Findlay, *op. cit.* p. 456.

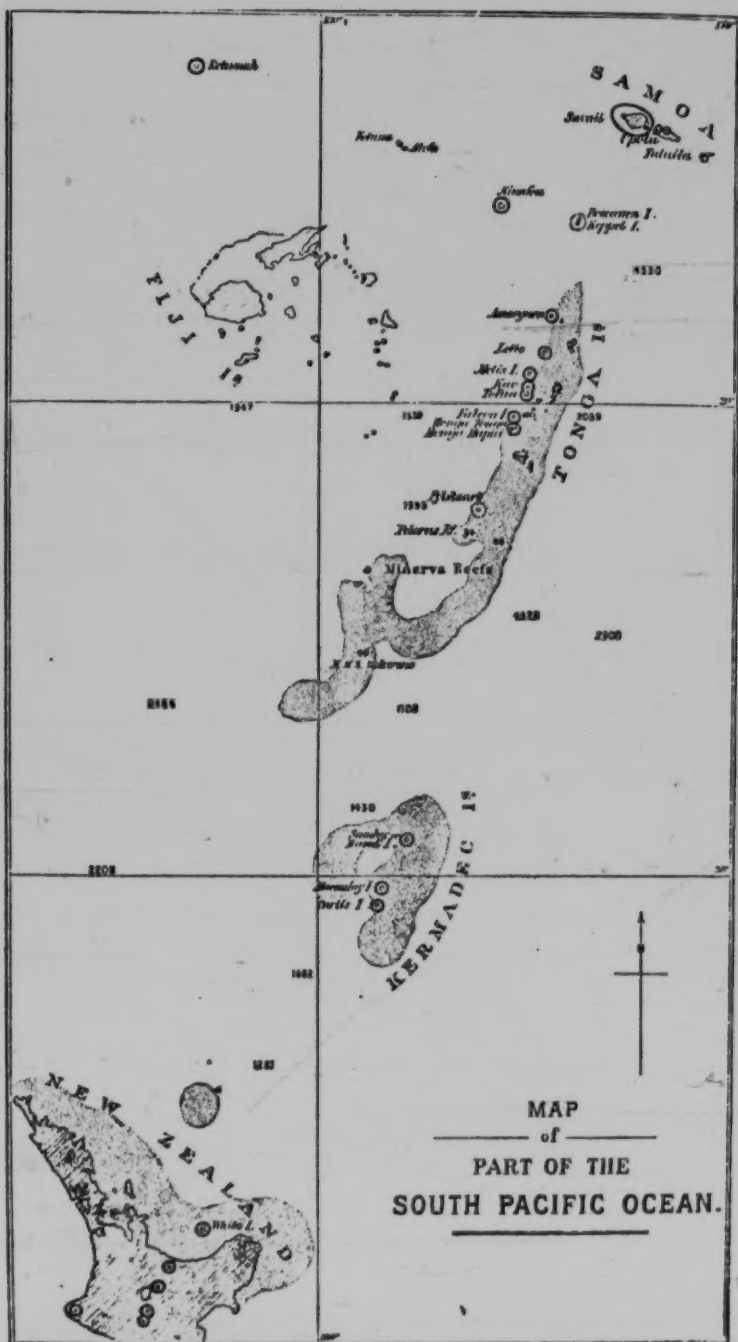
§ Findlay, *op. cit.* p. 558.

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96: Lister N-5 (1889-1890) 1891
OU9 Tonga OU9



[P. 594]

Tongan volcanoes are members at right angles. It is significant that Savaii is the largest of either series, and is situated at the point where they intersect. Savaii ends the series in a northerly direction.

The soundings which have been taken in this part of the Pacific show that the Tonga Islands are situated on a ridge, which rises to within 1000 fathoms of the surface and is prolonged in a south-westerly direction for half the distance between this group and New Zealand. To the south of the Tonga Islands the top of the ridge reaches the surface of the sea, or comes close to it, at the Minerva Reef and three shoal patches indicated in the chart.

On the eastern side, where soundings have been taken, the slope descends to depths of over 2000 fathoms, and at two points, one to the north-east of Vavau, the other to the east of the southern extension of the ridge, the very great depths of 4530 and 4428 fathoms have been sounded.

On the west the slope appears to be less steep, but a depression (with a depth where it has been measured of over 1500 fathoms) lies between this ridge and the Fiji group.

The Kermadec Islands, lying between the southern part of the ridge and New Zealand, are the highest points of a large area which is also within the 1000-fathom line. It is, however, separated from the Tonga ridge to the north and New Zealand to the south by depths of over 1500 fathoms.

Both elevations are traversed by a line of volcanoes, which, as Mr. S. Percy Smith * has pointed out, continues the direction of that of the Taupo Zone of New Zealand. Mr. Smith suggests that the volcanoes are situated in the course of a great fissure which extends from Ruapehu, at the southern end of the Taupo Zone, through the Kermadec and Tonga groups to Samoa. This view receives some support from the fact that the eruption of Falcon Island, beginning in Oct. 1885, was contemporaneous with the increased activity (in November) of the geyser of the white terrace of Lake Rotomahana, which preceded the great explosion of Tarawera in June of the following year.

[In the map facing this page the dotted areas between New Zealand and the Tonga Islands indicate depths of less than 1000 fathoms. (The eastern limit of the Kermadec area is undetermined.)

The thick circles indicate active or extinct volcanoes, the broken circles islands whose volcanic nature is doubtful.]

(b) *Islands formed of Sedimentary Volcanic Material.*

Belonging to this division are several islands in the Hapai Group, and the island of Eua.

The Nomuka Group, which forms the southern division of the Hapai Islands, consists of a number of small islands which are the highest points of an extensive plateau. Over a large area the top of this plateau is within 50 fathoms of the surface of the sea.

* 'Geological Notes on the Kermadec Group,' Trans. N. Z. Inst. vol. xx. p. 333.

133 Nomuka itself is a limestone island, and will be described later; but Mango, Tonua, Nomuka-iki, Tonumeia, and probably Kelefasia are formed of volcanic tuffs.

The island of Mango lies about six miles E.S.E. of Nomuka. The main part of the island is some two miles in length, and of an oval shape, with the long axis running east and west. Projecting to the south of the west end of the island there is a small peninsula connected with the main mass by a narrow neck. At the eastern and western ends of the island there are rounded hills attaining a height of about 150 feet above sea-level.

133 This island is composed for the most part of layers of volcanic tuffs which vary widely in character. The summit of the eastern hill is formed of thick and approximately horizontal layers of fine white material which is largely calcareous, but contains a fine scoriaceous residue. The western hill is composed of layers of a coarse sandstone dipping at an angle of about 2° or 3° towards the W.S.W., and consisting of rounded fragments of lava embedded in a calcareous matrix. Fragments of coral, some of them 6 inches in diameter, are mixed with the volcanic fragments. Between the two hills layers of the two kinds of rock alternate with one another.

134 The southern peninsula is formed of a mass of breccia traversed in various directions by cracks, but presenting no regular stratification. The fragments are embedded in a calcareous matrix and vary greatly in size. Lying on the surface are some large boulders, some of coral, some of volcanic rock, which appear to have been isolated by the gradual removal of the finer material in which they were embedded. The largest of these was a rounded mass of coral which measured 10 feet in length, 7 feet in breadth, and $3\frac{1}{2}$ feet in height. In the cliff which surrounds this part of the island, fragments of coral were thickly scattered among the volcanic constituents. I counted 43 pieces exposed in one square yard. Though Mango is surrounded by a broad fringing reef, I failed to find any raised coral-rock upon it.

The island appears to have been originally formed as a submarine bank, probably of volcanic origin, on which corals grew. On a return of volcanic activity the coral-reef was broken up, and the fragments of it mixed with the volcanic materials have formed the breccias of which the island is composed.

It appears that the southern promontory was the nearest point of the present island to the centre of the eruption, for there the constituents of the breccia are largest and mixed indiscriminately without stratification. The nearly horizontally stratified rocks on the eastern and western hills were laid out now in finer, now in coarser layers by the action of the water. The island has subsequently been elevated to its present height, the rounded outline of the hills being due to subaerial denudation.

133 It is remarkable that while the island is now surrounded by flourishing coral-reefs, there should be no old raised reef upon it. The most probable explanation appears to be that elevation took place too rapidly to allow of the growth of reefs of any considerable extent.

Some miles to the westward of Mango is the small island of Nomuka-iki (=little Nomuka), to the south of Nomuka, and separated from it by a narrow channel. This island is about 60 feet high, and one mile in its longest diameter; it also is formed in part of a hill of volcanic tuff, the remainder consisting of a flat of calcareous sand. The layers are horizontal and are made up of finer and coarser beds of brown and grey ashes alternating with one another. Here there are no fragments of coral mixed with the ashes. A fossil univalve of the genus *Pyrula* occurred in these beds, and some of the finer ones contained vertical burrows (of an annelid?) which were filled in with the coarser material of the overlying layer.

As at Mango, there are no raised coral-rocks overlying the volcanic beds, although broad fringing reefs surround the shores.

The beds have evidently been laid out by water, but under quieter conditions than those of the neighbouring island, and the mound has since been elevated to its present height.

A little to the south of Mango are the two islands Tonumeia and Kelefasia. Capt. Oldham visited Tonumeia when engaged in the survey of the group in 1890. He found it to consist of volcanic tuffs forming a cliff 80 feet high, and dipping at an angle of 3° to the south*. Mr. Harker finds that a specimen of these beds consists of "fine volcanic ash compacted by a calcareous and ferruginous cement into a yellow-brown rock."

Capt. Oldham also obtained some black nodules two inches in diameter, with portions of a calcareous matrix still adherent, and which had presumably weathered out of the layers of tuff. Mr. Harker describes these as consisting of oxide of manganese having "the general characters of psilomelane, but soft and of a low specific gravity, and therefore perhaps altered."

The presence of these nodules, supposing them to have occurred naturally in the beds of which Tonumeia is composed, is very remarkable. They are generally supposed to be formed only in deep water; but the situation of the island on the same shallow plateau as Mango and Nomuka-iki, and the general correspondence of its formation with theirs, point strongly to the conclusion that these islands were all formed under similar conditions. The presence of coral and other organic remains amongst the volcanic constituents of these islands shows that they were formed in shallow water.

Judging by its appearance as seen from the sea, I have little doubt that Kelefasia belongs to the same class of islands.

The island Tonua, to the north-east of Mango, was also examined by Capt. Oldham. It is composed of yellowish-white rocks which form a cliff twenty feet high, and consist of volcanic ashes with little calcareous matrix, though shells of pteropods and the cast of a gasteropod (*Murex*?) were found among the volcanic fragments†.

In the central part of the Hapai group there are two islands,

* The substance of Capt. Oldham's report on this island and Tonua is given in Mr. Harker's paper in the Geol. Mag. for June, 1891.

† Harker, *op. cit.*

- 133 Kotu and Matuku, which, as seen from the sea, appeared to me to be of the same nature as those above described in the Nomuka group. The only confirmatory evidence that I can offer is a [134] remark on the island of "Kotoo" in the narrative of Capt. Cook's Voyage to the Northern Hemisphere (vol. i. p. 271), where it is stated that this island "terminates in reddish clayey cliffs."

- 131 Leaving the Hapai Group, I will now attempt to describe the island of Eua, lying to the south-east of Tongatabu. (For the map of this island, see Pl. XXIII.) Eua is somewhat oval in shape, but pointed at the two ends; the long axis is directed almost exactly north and south. It is about $12\frac{1}{2}$ miles long, rather more than 4 miles broad, and attains a height of 1078 feet. The island is formed of a basis of volcanic rock, in great part covered by limestone. 133 A ridge of high ground traverses the island from north to south, attaining a height of over 1000 feet at two points, one near the middle of the ridge, the other about four miles to the south. Between these two points the general level of the ridge is from 800 to 1000 feet. The volcanic formation comes to the surface over a great part of this high ground, and where it is bare of vegetation is readily recognized by its bright red colour; but patches of limestone occur in many places, sometimes in large projecting masses, like that which forms the south summit, sometimes weathered down into groups of isolated pinnacles standing on the volcanic basis.

Northward the ridge descends gradually to an elevation of about 500 feet and extends at this level, as a long flat-topped plateau or terrace, to the north end of the island. This will be referred to as terrace b. The volcanic basis appears in irregular patches along the centre, but its eastern and western sides are bordered by cliffs of limestone, some 200 feet in height, whose base evidently marks an old shore-line at a previous stage of elevation of the island.

The whole eastern side, presented to the trade wind, is very abrupt, and rises in range above range of limestone-cliffs, the steep slopes between them being covered with dense wind-swept forest. The descent is interrupted along the greater part of this aspect by a narrow terrace, from which on the one hand perpendicular cliffs descend to the sea, and on the other a slope of debris leads to the foot of the range of cliffs which limit the central ridge along its whole length. This terrace is, however, absent opposite the middle of the eastern aspect, and here a steep slope extends directly from the foot of the higher range of cliffs to the sea. The volcanic basis is exposed on this slope, and at the shore are projecting dykes of intrusive rock. Farther to the south the terrace is again interrupted by a break occupied by a small terrace at a lower level. At this point also a dyke appears on the shore at the foot of the cliffs.

Along its western aspect the central ridge is well-defined at the northern and southern ends, being bordered by limestone-cliffs. The middle part of this aspect is broken up by small valleys which

(Eua Island)

take their origin in the highest part of the island, and here the volcanic basis is largely exposed. A wide terrace of limestone standing at a level of 250 to 350 feet extends along the whole of the western side of the island, spreading out from the lower slopes of the central ridge. This will be referred to as terrace *a*. It is widest opposite the middle of the island, becoming narrower to north and south, and forms nearly half the total area of Eua. From its western border the land slopes more or less steeply to the sea.

The western aspect of the island offers a marked contrast to the eastern. Instead of the dense wind-swept forest, there are wide open stretches of grass-covered country, intersected here and there with belts of luxuriant bush. The streams which have scored the western slopes of the central ridge dip underground on reaching the limestone terraces and pursue a subterranean course to the sea. There are, however, continuing some of the stream channels, deep gorges cut in the western terrace, whose sides descend abruptly from the general level; these are overflow channels, in which water runs only after heavy rains.

There is one stream, possibly there are others, in the higher part of the island, which pursues a different course. At an elevation of about 620 feet there is a funnel-shaped depression in the volcanic deposits; and at the bottom of this funnel a vertical shaft descends several hundred feet into the interior of the island. Its mouth measures about 100 feet in one diameter and 30 feet in the other. After flowing down the side of the depression the stream falls into the shaft, pouring over the layers of hardened tuff at one end of the long axis of the opening. The mouth of the shaft is surrounded by trees, festooned with creepers which hang down into it, and a mist rises, carried upwards by the return currents of air. The native name of the place is "Ana-ahu" (=Smoky hole). It would appear that a crack was formed during the upheaval of the island, which has been gradually enlarged at this spot by the action of the stream.

The volcanic basis of Eua appears to consist very largely of fragmentary accumulations arranged in strata. At the mouth of the "Ana-ahu" (about 620 feet above the sea) the layers are horizontal, and composed of moderately coarse fragments. Between layers of a purely volcanic nature there occur others which are hardened by a cement of calcite, in which, besides the volcanic fragments, foraminifera and other organic remains are embedded*.

Dr. John Murray finds among the organic remains "many pelagic foraminifera, and pelagic molluscs such as pteropoda and heteropoda; also a few ostracoda and fragments of bottom-living molluscs. Among the foraminifera *Globigerina rubra* and *bulloides* and other *Globigerinae* are most abundant." Dr. Murray concludes that "these rocks were evidently laid down in deeper water" than the limestones investing the volcanic basis.

* Slide No. 1266 in the collection at the Woodwardian Museum, Cambridge.

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(Eua Island)

133 Among the volcanic fragments Mr. Harker has detected red garnet
(135) and tourmaline, whose presence indicates the existence of metamorphic rocks somewhere in the vicinity.

A similar partly calcareous rock occurs at the northern end of terrace δ, where the volcanic basis is exposed*.

(134) The uppermost part of the volcanic formation consists of red, yellow, and brown beds of ashes, which are very much decomposed by weathering. Some are nearly horizontal, others a good deal contorted, but they are never, so far as I observed, regularly inclined at an angle, as though they had formed part of a volcanic cone.

As mentioned above, dykes of intrusive rock project on the eastern shore. They are composed of augite- and hypersthene-andesites. Large rounded boulders of this rock, mixed with boulders of coral, form the shore, and the natives obtain here the hard
(412) rounded stones which are used for pounding the root of the kava
(276) plant, in the preparation of the beverage of that name. The dykes penetrate the beds of tuff and form well-marked projections at the surface; they do not, however, penetrate the overlying limestone.

Besides the intrusive rocks there is a crystalline, plutonic rock in this part of the island, of which I obtained a specimen from a boulder on the shore. Mr. Harker describes it as "uralitized gabbro." Although I did not find this rock *in situ*, I have no doubt that it exists as a natural constituent of the island. It is highly improbable that a boulder should be brought here by artificial means, for there is no possible landing-place for vessels along the whole of this eastern coast, and the only access to it from the anchorage on the western side is by steep hill-paths. A reef about 100 yards wide stretches out from the shore, and on the edge of this reef a vessel would strike, supposing one to be wrecked. I think therefore it may be concluded that the rock occurs naturally on the island.

The volcanic basis of Eua appears to have been produced by an extensive submarine eruption which formed a mound of considerable extent, and into which lava was injected.

The eruption seems to have occurred at some depth, for the organisms found mingled with the volcanic materials are, according to Dr. Murray, pelagic and not shallow-water forms. Subsequent to its formation and the cessation of the volcanic forces, but prior to the deposition of the overlying limestones, the mound was elevated to at least its present height and considerably denuded. The evidence for this denudation is afforded by the elongated shape, and the steepness of the eastern slope of the volcanic basis which underlies the limestone; these imply the removal of a considerable part of the original mound, which is built up in the main of horizontal layers. After its denudation the island subsided again, before the deposition of the limestone formation.

The limestones invest nearly the whole of the lower part of Eua up to a level of about 500 feet, and above this level they occur, though less continuously, as high as the summit.

* Slide No. 1273.

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Diagrammatic Sections across Eua (Tonga Islands).

Fig. 1.

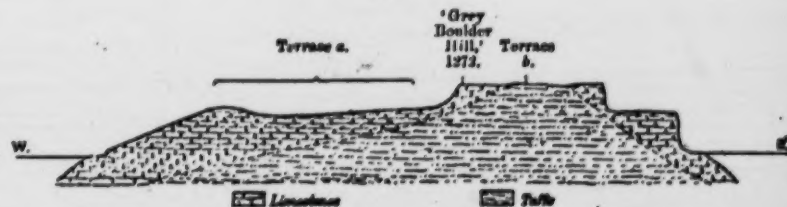


EXPLANATION.

Fig. 1. Section passing E. and W. through the summit. At the S.E. end the country lying to the N. of the section is indicated, to show the position of the Pinnacle from whose base specimens Nos. 1269 and 1270 were taken.

Fig. 2. Section E. and W. through the island, to the north of the summit. The position of terrace b, 'Grey Boulder Hill,' is shown.

Fig. 2.



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133 The most striking feature of the formation is the existence of well marked terraces on the lower slopes.

The terrace *a*, as above stated, extends along the whole length of the western side of the island, at an elevation of about 250 to 365 feet above sea-level.

The outer, western border of the terrace is for a great part of its length higher than the interior. Beginning at the northern end, we find the terrace forming a narrow band, so narrow that it makes only a slight interruption in the sloping side of the island. To the south it gradually widens out, being at first level from side to side, but soon the interior becomes depressed below the margin. The depression is greatest at one-third of the length of the island from north to south. Here the margin is about 65 feet higher than the interior. As we advance southward the depression of the interior becomes less marked, until at the junction of the middle and southern thirds of the length of the island the terrace is again level, and remains so to the southern end. Passing across the terrace from east to west, in the region of the depression we descend a very gradual slope to near the outer border. From the lowest part the ground rises to the margin of the terrace, in most places by a gradual ascent, but at one point the rise is abrupt. Opposite the town of Ohunua there is a gap in the high margin, the bottom of which is at the same level as the depressed inner part of the terrace. Through the gap there runs a steep-sided ravine, cut in the limestone rock; it is formed by the junction of two of the overflow channels of the streams of the upper part of the island, and there is water in it only after heavy rains. Having passed the gap the ravine pursues a straight course down the sloping side of the island to the sea, and at its mouth there is a break in the reef and an anchorage for small vessels.

(504)

On the margin of the terrace to the south of the gap the limestone rock forms projecting masses, and in some of these definite *Astraea*-like coral structure is to be seen. Other specimens present a homogeneous structure to the naked eye. Dr. Murray has examined sections of these*, and finds that they are "chiefly made up of calcareous algæ, together with fragments of coral, mollusca, echinoderms, and foraminifera"†. He concludes from the character of the organisms that the deposit was "formed in quite shallow water."

With regard to the peculiar conformation of the terrace, it appears that the depression in the interior must either have existed at the time that the terrace was elevated above sea-level, or have been excavated since by the denuding action of rain or streams.

Slide No. 1271.

Among the foraminifera the following kinds were recognized:—

Miliolina, sp.

Orbitolites duplex (?).

Textularia trochus (d'Orb.).

Globigerina bulloides and *G. rubra* (?).

Planorbulina larvata (P. & J.).

Carpenteria monticularis (Carter).

Polytrema minutum (Linn.).

Calcarina hispida (Brady).

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In ordinary weather the streams flow beneath the limestone rock, and it is only after heavy rains that running water is found in the ravines which traverse the terrace. Moreover, the sides of these slope abruptly down from the level of the terrace, and their course is for the most part quite independent of the direction of the depression. Finally, it may be asked, Why should the drainage from a flat area excavate the interior and leave the margin comparatively untouched along almost the entire length of the terrace? It appears, then, that the terrace had much the same general conformation which it now presents when it was upraised from the sea; in other words, that the elevated border constituted a small barrier-reef lying nearly a mile from the shore of the island as it then existed, with a break in it at one point, and enclosing a lagoon with a depth of 6 fathoms over a considerable area. At its northern and southern ends the reef joined the shore and became fringing. A similar relation of reef to shore occurs in the reefs now forming the harbour of Suva in Viti Levu, the capital of Fiji, where the barrier which protects the anchorage is continued into a fringing reef along the southern shore of the island.

As above described, there is a narrow limestone-terrace running along the eastern side of the island at about the same level as terrace *a* on the western, and interrupted in the middle by a deep gap, the head of which is formed by the cliffs of nearly the highest part of the island. On the north of the gap the terrace ends abruptly in a cliff, facing south, and standing out beyond the cliff is an isolated pinnacle of limestone rock, which I estimated as measuring about 300 feet from top to bottom. The rock of the base of the pinnacle presents to the naked eye a compact homogeneous structure, except that in one specimen there is a cavity which was occupied by a univalve of the genus *Cerithium*. Dr. Murray has examined sections of the rock* and finds that it is made up principally of calcareous algæ, together with fragments of echinoderms, molluscs, and a number of foraminifera†.

The limestones of terrace *b*, which stands at an elevation of about 500 feet, are also for the most part homogeneous compact rocks. A section from the edge of the terrace‡ is found by Dr. Murray to be "chiefly made up of calcareous organisms. Fragments of mollusca, echinoderms, polyzoa, and calcareous algæ, together

* Slides 1269 and 1270.

† Viz. :—

Spiroloculina, sp.
Bulimina (cf. *compressa*).
Bolivina textularioides (Reuss).
Textularia trochus (d'Orb.).
Cristellaria, sp.
Globigerina (*rubra*?).
Truncatulina, sp.
Planorbulina (cf. *larvata*).

Polytrema miniacum (Linn.).
Rotalia, sp.
Tinoporus bacculatus.
Cymbalopora Poyi (d'Orb.).
Gypsea inharens (Schultze).
Cyclolypus Carpenteri (Brady).
Heterostegina depressa (d'Orb.).
Nannulites Cumingii (Carp.).

‡ Slide No. 1272.

133 with a large number of foraminifera". True coral does, however, exist on this terrace, as I found one large mass clearly exhibiting a structure like that of a *Porites*.

The limestones from the higher part of the island present for the most part a compact structure. Some of them are crowded with foraminifera, but large masses of coral appear to be absent.

With regard to the nature of the limestone formations as a whole, as indicated by the sections above described, Dr. Murray writes to me that they "may all have been formed in or about reefs, and true coral-reefs may have been living quite close to them when they were laid down;" but from the scarcity of examples of the larger corals he concludes that "it is more likely that they were laid down in depths of from 30 to 100 fathoms, and that they formed the base of true coral-reefs."

The conformation of the surface of terrace *a* points to its having formed a true reef, and having been elevated without much denudation; but in the case of terrace *b* and the higher limestone rocks, the extent to which they have evidently been denuded and their nearness to the volcanic basis bear out Dr. Murray's view, founded on the nature of the organisms they contain.

Some features of interest are presented by the shores of the island.

[36] On its western side, in the neighbourhood of the village of Ohunua, the island is bordered by a narrow fringing reef some 50 to 100 yards in width. There are clear traces here of recent elevation. To the south of the village there is a low shore-cliff undermined by the action of the sea, but separated from the present shore by a strip of sand some 50 to 60 yards wide, covered with coconut palms and other trees.

From a little to the north of the village the island is bordered by a cliff some thirty feet high, which extends to the northern end. The foot of this cliff is washed at high tide by the sea, and is deeply undermined, the upper limit reached by the action of the sea being sharply defined. Above this present line of undermining, and separated from it by a projecting ledge of rock, there is another and older one, the upper limit of which is sharply defined and separated from that of the present line of wave-action by a distance of seven feet. When looking at the cliff from the sea, I thought I detected a third line of wave-action at a still higher level.

From the foot of the cliff the shore-platform extends some fifty to a hundred yards, and is bordered by growing coral. Over the greater part of its extent this platform is flat, and at high tide is

- * *Miliolina*, sp.
- Orbitolites complanata* (?)
- Textularia trochus* (d'Orb.)
- Polymorphina*, sp.
- Glabigerina* (*bulloides*?)
- Truncatulina*, sp.
- Planorbulina larvata* (P. & J.)
- Carpenteria monticularis* (Carter).

- Polytrema miniacum* (Linn.)
- Gypsina inharens* (Schultze)
- Rotalia*, sp.
- Calcarina hispidula* (Brady)
- Cyclotylpeus Carpenteri* (Brady)
- Heterostegina depressa* (d'Orb.)
- Nannulites Cumingii* (Carpt.)

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covered by about two feet of water. In some places, however, there are the remains of the shore-platform which was formed when the island stood at a lower level, and corresponds with the higher line of undermining seen in the cliffs above. Its upper surface is above the level of high water, and is worn into irregular shapes. It is overgrown in some places by a small shrub (*Pemphis acidula*). 133

[137] These features point clearly to recent elevation, and the distance between the two lines of undermining seen on the cliff shows that the extent of this was 7 feet. Further, it is clear that the elevation took place rapidly, at least as measured by the rate at which the sea is wearing back the cliffs, for if it had been accomplished slowly, in comparison with that measure, the rock which forms a projecting ledge between the two levels of excavation would have been worn back during the elevation.

It is interesting also to note that if the island were to remain at the level it occupies at present, all traces of the recent elevation would in time be obliterated, for as the cliff was worn back the rock bearing the impress of the action of the waves when the island was at the lower level would be removed, while the remnants of the older reef-platform would be worn away to the level of the present one.

It may further be observed that a reef-platform such as this consists of two distinct parts—an outer formed by the growth outwards of the existing reef, and an inner formed of the base of the older and elevated reefs, whose higher portions have been removed by the action of the sea.

At the south end of the island there is no reef; deep water extends to the foot of the cliffs.

A narrow fringing reef, some hundred yards wide, extends along the eastern side of Eua. Its upper surface is above the level of high water and partly worn away by the sea, offering evidence of the recent elevation of the island, corresponding to that found on the western shore. The margin of the reef is exposed to the full force of the rollers coming up before the trade wind, and presents a remarkable basin-like growth of corallines similar to that found on the southern side of Tongatabu, to be described later.

At the south end of the eastern shore of Eua there is a remarkable instance of the different manner in which the volcanic and limestone rocks are excavated by the action of the waves.

A narrow terrace, perhaps a quarter of a mile broad, runs round this end of the island, standing at a level of some 240 feet above the sea. It is bordered by cliffs which go sheer down into deep water. Limiting it on the land side there is a steep ascent to a higher terrace above.

The limestone rock here lies on the steeply sloping surface of the volcanic basis of the island. The outer or sea border of the terrace and nearly the whole face of the cliff are formed of limestone; but at the inner border of the terrace, and here and there in the lower part of the cliffs, the volcanic basis is exposed. At one point there is a large circular chasm excavated in the terrace which descends to sea-level and communicates with the sea by a

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[Eua Island]

133 wide opening, overarched by a natural bridge of the limestone rock, the under surface of which is festooned with stalactites. The sea entering beneath the arch washes the bases of the nearly vertical sides of the chasm. The place is called by the natives Matalanga Maui (or the hole made by the implement for planting yams belonging to the god Maui). The manner in which the chasm has been excavated appears obvious. At the foot of the cliffs there are several caves in different stages of excavation, which are formed by the sea wearing back the volcanic rock where it is exposed beneath the limestone. The Matalanga Maui has been formed by the removal of the volcanic rock to such an extent that the cave has approached the surface of the terrace and the roof has fallen in.

I may here recapitulate the main features which seem to be indicated by the structure of Eua.

The presence of the plutonic rock points to the existence of an ancient and much denuded mass of such a character in the vicinity.

In the neighbourhood of this mass, and at a considerable depth below the surface of the sea, a volcanic eruption occurred, forming a mound, some of whose upper layers were mingled with pelagic organisms as they were laid out.

It appears that the mound was elevated above the surface, considerably denuded, and afterwards depressed to such a depth, at least, as to submerge its summit.

A covering of calcareous organisms was deposited on the volcanic basis while it was submerged; but so far as the evidence goes the formation is a shallow-water one. The island has since been again elevated by stages to the present height.

During periods when the elevatory forces were in abeyance, the sea wore back the already emerged limestone-deposits, forming terraces bounded by lines of cliff, but in one case at least (namely, the western terrace α) it appears that a true coral-reef was formed in the neighbourhood of the shore.

Dr. Murray finds that it is impossible to assign the organic deposits of the island to a definite geological epoch. Though he is of opinion that they are old, there is no satisfactory evidence to refer them to the Tertiary period.

(c) *Islands formed entirely of Limestone.*

The islands forming the remarkable group of Vavau differ widely in their shape and arrangement from coral islands in general.

Vavau consists of one large island which gives its name to the group, and of a number of smaller islets (see Pl. XXIII.). Vavau Island presents a high and fairly even coast-line to the north and north-east, bordered by limestone cliffs from 300 to 500 feet in height. On the south and south-west the general lie of the land is lower than that on the northern coast. Long promontories stretch out from the main mass of the island, separated by narrow and deep

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arms of the sea. The islets are grouped about this coast, in some cases continuing the lines of the promontories. The beautiful and secluded harbour of Neiafu is bounded in part by two of these promontories, and protected from the sea by one of the larger islets situated between them. It forms a long basin more than 20 fathoms deep over the greater part, and almost entirely surrounded by land over 100 feet in height.

The surface rock all over the group consists, so far as I am aware, of limestone. I was unable to find the underlying basis at any point. Even at the foot of the high cliffs on the northern shore the rock, at the two points at which I saw it, was of this nature, and I found no fragments of volcanic or any other formation than limestone on the beaches. Although I saw no vertical cliff at this part of the island, extending from the top to the shore, the coast-line is in many places so steep that I have no doubt that the formation attains a thickness of at least 300 feet. It consisted for the most part of a hard homogeneous material, but at one point, in the lower part of the cliff, numbers of large bivalve shells were embedded.

The main mass of the island presents an undulating surface, gradually sloping from the high northern border towards the south. Though there are valley-like depressions in several places, I came upon none which contained streams or even ravines. Springs of fresh water issue from the rock at many points on the shore.

The outlying islands to the south of the group, as may be seen by the Admiralty chart (No. 2357), are surrounded by coral-reefs, which in many cases extend as broad expanses far from the island with which they are connected. As the inlets penetrate among the islands and promontories, and their shores are cut off from the open ocean, the reefs become narrower or disappear; though in some cases (as in the inlet to the north of the promontory in which Neiafu is situated) there are coral reefs of considerable extent growing far up in the sheltered channels.

There is one feature which at once strikes a visitor approaching the group by the usual steambout course from the south-west and passing up to the harbour of Neiafu, namely, that the off-lying islands and projecting points of the main island, on either hand, are flat-topped when seen in profile, and that the majority of them stand approximately at one of three levels of elevation above the sea. Corresponding in level with the tops of the lower islands there are, moreover, terraces on the sides of the intermediate and highest ones; and in the same way there are, on the sides of the highest points of land, terraces whose level corresponds with the tops of the islands of an intermediate height.

The islands and promontories may thus be described as being one-, two-, or three-storied (see fig. 3).

On first entering the group, the flat one-storied islands Hunga and Nuipapa lie on either hand: their sides drop vertically into the sea and are deeply undermined below by the action of the waves. Right ahead stands up the mass of Mo'unga Lafa (= Flat Mountain), whose densely wooded sides present two well-marked terraces in

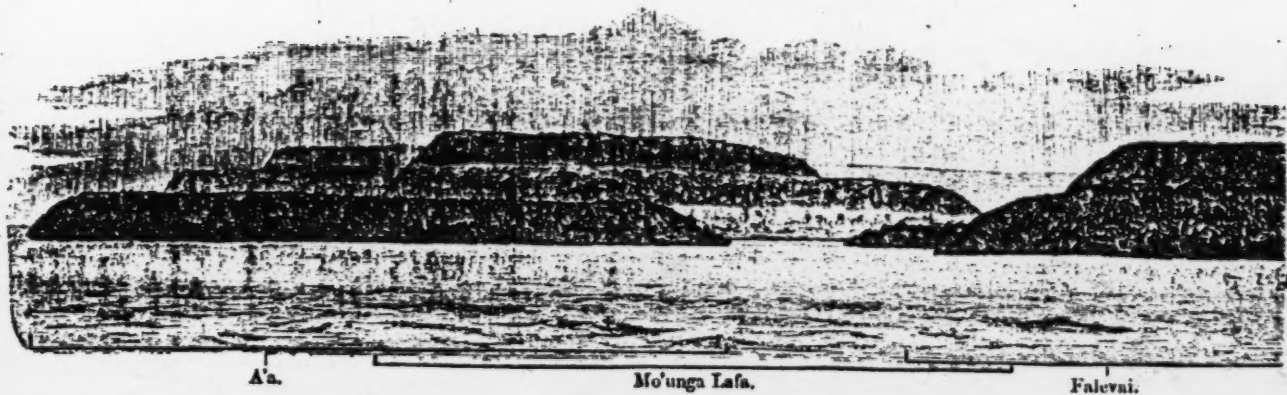
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Fig. 3.—View among the Islands to the South of Vavau.



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Evavau Group

- 133 their descent to the sea. Opposite it, on the right of the passage is the island of Falevai (called "Kopa" in the Admiralty chart), which consists in part of a two-storied mass, in part of a one-storied tongue of land which extends out towards Mo'unga Lafa, while a terrace at the same level interrupts the slope on the side of the higher part of the island. Small islands are dotted over the sheltered expanse of water, two of which, A'a (called "Koto" in the chart) and Langito'o, present features of interest which will be alluded to below. As we advance, the hill Talau comes into view, exactly repeating the shape of Mo'unga Lafa, in the level outline of the summit and the two lines of terraces on its sides.

[26] The rough aneroid measurements that I obtained give about 140 feet as the upper limit of the first "story," 260 to 350 feet as that of the second, and 420 and 520 for the summits of Talau and Mo'unga Lafa, the two highest points of land in this part of the group. Although these numbers show that the levels of the terraces at different points do not agree accurately, the conclusion was strongly impressed upon me on the spot, that the terraces and islands at each level do in fact correspond, that is, that at successive stages in the elevation of the group, the summit of each "story" has stood at sea-level. The differences in their level may be in part accounted for by the unequal action of the elevatory forces at different points of the area acted on. Thus, on the hills Talau and Mo'unga Lafa, which are between three and four miles apart, while the summit of the lowest story is at about the same level in each (140-150 feet), the two upper ones stand at about 270 and 420 feet in Talau as against 360 and 520 feet in Mo'unga Lafa. From this it appears that the second elevation was of greater extent in the neighbourhood of Mo'unga Lafa than to the eastward near Talau.

One remarkable feature in the contour of the land is the fact that in some cases the summits of the islands, though level in profile, are excavated by well-marked depressions.

The most perfect example of this structure is presented by the little island of A'a (the Koto of the chart) above mentioned. The island is of an oval shape, being about three quarters of a mile long and half a mile broad. It rises out of deep water, and is not surrounded by a reef. In the chart a sounding of over 40 fathoms is shown close to the southern shore, and except for a small shallow area at the eastern end the other soundings in the neighbourhood indicate nearly as great or greater depths.

[134] The sides slope steeply up to a height of from 85 to 95 feet (an elevation considerably less than that of the top of the first "story" in the surrounding islands), but the interior of the island is depressed 50 or 60 feet below the level of the margin, being occupied by a flat which stands at a height of some 36 feet above the sea. The margin is of a nearly uniform height and forms a complete unbroken ring. On its summit rough masses of limestone rock stand up, but the flat interior is formed of brown earth. It seems clear that when the rock forming the edge of the island stood at sea-level a small lagoon some 10 fathoms deep occupied the centre.

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[VAVAU GROUP]

I was led to visit A'a by seeing its depressed interior from the top of Mo'unga Lafa. From that position the neighbouring island Langito'o, to the west of A'a, which rises to about the same height, appeared to have a similar depression in it. Unfortunately I had no opportunity of visiting this island.

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Fig. 4.—Sketch of the contour of the island of A'a (Vavau Group).

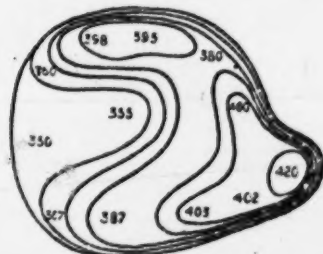


The numbers indicate heights, in feet, above the sea.

The summit of the three-storied hill Talau, near Neiafu, presents similar features. Here, too, a high margin surrounds a central depression, but the margin is complete for only three quarters of a ring. For the other quarter the level of the margin descends to that of the interior.

The accompanying rough map of the summit of the hill shows

Fig. 5.—Sketch of the contour of the summit of Talau (Vavau Group), Tonga Islands.



The numbers indicate heights, in feet, above the sea.

the contour. From this it is seen that the bottom of the depression lies some 40 to 50 feet below the higher part of the margin.

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The summit of the other three-storied hill, Mo'unga Lafa, is, I believe, as the name implies, flat. The uniform covering of bush obstructs any general view of it; but in traversing it I was unable to find any depression corresponding to that in the summit of Talau.

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[137]

In the short visits that I paid to the Vavau Group, I landed on a few only of the islands, and had not the means of making satisfactory observations of contour. I have drawn attention to the features above described, with the hope that when the survey of the Tonga Islands which was begun by H.M.S. 'Egeria' is continued, the heights and contours of the islands and terraces occurring at different levels in this remarkable group may receive special attention.

The peculiar shape of the group, penetrated by long, narrow, and deep inlets of the sea, may perhaps be accounted for by supposing a much-denuded basis, probably of volcanic nature, whose surface was deeply scored by valleys previous to its subsidence. While the island was submerged the deposits which formed the limestone rock were laid down, and the lower layers would have already begun to accumulate during the downward movement. But, though the base of the limestone deposit may very probably have been formed during subsidence, the upper part and the contour of the land must be chiefly referred to the succeeding period, which has, in the main at least, been one of elevation.

During intervals in the elevation, the terraces and plateaus which constitute so marked a feature have been formed, first on the highest and later on the lower peaks and ridges, while the intervening valleys still penetrate far among the islands and promontories.

It is interesting that, both at Vavau and at Eua, the reefs which have been formed during intervals in the elevation of the islands have in some cases acquired atoll- or barrier-like contours.

The larger islands of the Hapai Group lie in a line extending from Haano in the north to Uiha and Alefa in the south. They are indeed the elevated parts of a long reef, which, after extending in a south-westerly direction for some 30 geographical miles, sweeps round in an even curve to the west and north-west, and is finally lost among the reefs and islands of the Kotu Group. At two points in the northern part of the reef, gaps are indicated in the chart. The northern of these is bordered by reefs which are continued for a considerable distance in a westerly direction. To the south of the southern part of this reef there is an outer and more interrupted line of reef concentric with it. On the convex or weather side the margin of the reef is even, but on the opposite side the coral grows in irregular patches and the margin is ill-defined.

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The island of Lefuka may be taken as a type of the islands situated on the reef. It is about three quarters of a mile in breadth, and some three or four miles in length. From the beach on the western side there is a very gradual slope towards the eastern side of the island, which is about 20 feet above high water. Near the

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[Hapai and Kotu Groups]

133 eastern side there is a rather rapid descent, terminating in a little cliff some 10 feet high, whose base is much excavated by the waves. The rock of which the cliff is made consists of masses of coral of various sizes, cemented together into a conglomerate. Its structure, in fact, resembles that of a shore-platform. Extending from the foot of the cliff some 300 yards to seaward is the present shore-platform, on which, at low tide, there is about a foot of water near the shore, while the outer part lies bare. The cliff of raised rock extends along the whole of the eastern shore of the island.

Some distance from the concave side of the long Hapai reef there are numerous shoals and small islands. The island of Fotuha, north of the Kotu Group, displays the abrupt undermined cliffs of a raised coral-island, and stands at an elevation of about 100 feet above the sea.

The few soundings that are given in the chart show depths of 10 to 24 fathoms along the greater part of the western boundary of the reef, though 30 fathoms is marked opposite the northern break in the reef above alluded to, and 56 fathoms within its northern border.

The Kotu Group consists of a number of small islands, from whose shores considerable tracts of reef extend at sea-level.

[504] The only island of this group on which I landed was Hafova. I found no raised coral-rock, but a loose sandy formation which attained a height of some 12 feet at the shore. The interior of the island is depressed and occupied by a marsh. There is a wide gap among the reefs on the western side, with a depth of some 8 fathoms, forming an anchorage which was at one time used by whalers. Of the other islands of the Kotu Group, three show the deeply undermined cliffs characteristic of raised coral-islands; but two of them, Kotu and Matuku, as already stated, recall, in their reddish-brown cliffs and peculiar outline, the tuff islands of Mango and Nomuka-iki of the southern part of the Hapai Group (see p. 508).

It seems clear that the long reef of the Hapai Group must be regarded as a barrier-reef or an imperfect atoll. The shoals and islands situated within the concavity of the reef, both the northern ones and those of the Kotu Group, probably either rest on or are parts of the mass on whose eastern and southern slopes the reef has grown, and the volcanic character which I thought I recognized in two of the latter offers some evidence as to the kind of formation of which the basis is composed.

The outer line of reefs, lying some four miles to the south of the main one, and concentric with it, is a very remarkable feature. Its relation to that reef seems to imply that it is of an older date, and accords very well with the view that the reefs are slowly growing outwards on the slopes of a submerged mound. It must be observed, however, that in the northern part of the great reef, in the neighbourhood of the larger islands, there appears no reason for supposing that the reef is moving away from the centre of the group, for it is bordered by flourishing coral-reefs on the western as well as on the eastern side.

[Hapai and Kotu Groups]

OF THE TONGA ISLANDS.

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The raised reef-platform of which the islands to the north are formed, as well as the raised coral-island Fotuha, and those of the Kotu Group, show that elevation has taken place, though only to a comparatively small extent, in the northern and western parts of the group. On the other hand, the absence of islands of any considerable size from the southern parts of the reefs appears to indicate that this region was not affected by the elevation.

The island of Nomuka in the southern part of the Hapai Group is triangular in shape, the sides, which are about equal, measuring some 2 miles in length. To the south lies the little island Nomuka-iki, separated by a channel a mile and a half wide, and 15 fathoms deep.

A large shallow lagoon occupies a great part of the larger island; it is less than a fathom deep, and its level does not rise and fall with the tide, while the water it contains is much denser than sea-water *. At the bottom of the lagoon there is a thick layer of black mud, which gives out a strong smell of decomposing matter when it is stirred. The land border is broad on the west and north-west of the lagoon, but narrow on the other sides. A ridge on the western side attains a height of over 160 feet at two points. On the east the land is much lower, varying from 15 to 96 feet above the sea, and on the south-west it is often hardly higher than the top of the beach. The formation consists of coral rock.

Nomuka and Nomuka-iki are surrounded by fringing reefs, which in the case of the latter stretch out a considerable distance (in one part over a mile) from the shore. The twenty-fathom line encloses both islands; on the eastern and north-western sides of Nomuka it is about half a mile from the edge of the reef, while on the west and south-west of Nomuka-iki it is a mile away and encloses some outlying coral patches. Outside the twenty-fathom line the slope is very gradual. Eight miles from land on the west and south-west (the only directions in which distant soundings have been taken) the depth is not greater than 50 fathoms †.

Nomuka is evidently an atoll which has been formed in shallow water, though it is only in the last stage of its elevation that the ring has been completed; and here the shallowness of the surrounding sea appears to exclude subsidence as a factor in its formation: for the summit of the elevation on which, on that hypothesis, the limestone formation rests would lie beneath the lagoon; but the floor of the lagoon is only some 9 fathoms higher than the bottom of the surrounding sea outside the reef.

To the east of the Nomuka Group, a reef dotted with islands is

* On comparing the density of the lagoon-water with that of sea-water and distilled water by means of a hydrometer, the readings were:—

Distilled water	— 2
Sea-water	+25
Lagoon-water	+39

† Opposite the western end of the channel between the islands I obtained a branch of a living madrepora at a depth of 31 fathoms, and a living fragment of one of the *Poritidae* came up on the 'Egeria's' sounding-lead from the same depth.

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(Tongatabu)

133 marked on the chart, resembling on a small scale the great Hapai barrier to the north.

Tongatabu is the largest island of the group. It is some 22 miles in greatest length, and of an irregular crescent shape, with its convexity presented to the south. Considerable tracts along the northern shore are not above the reach of the highest tides; but the level gradually rises towards the convex border, and the highest part is at the south-east, opposite Eua.

(504) An extensive shallow area lies to the north of the island. Opposite the middle of the northern shore, and extending for about a third of the whole of its length, there is a large basin, which forms the harbour of Nukualofa. It has an average depth of 15 fathoms, and communicates with the outer water by a deep channel on the eastern side.

A wide shallow area, having a depth of from 6 to 9 fathoms, extends from the western point of the island eastward, bounding the basin and eastern channel on the north. Along the outer or seaward margin of this area coral reefs grow up to the surface, forming a more or less continuous barrier on the east and north-west. To the north, however, the line of reefs is interrupted, and here shallow banks (though apparently without reefs) extend for some 15 miles in the direction of the Nomuka Group. Several islands, some of sand, some of coral rock elevated about 15 feet, are dotted along the reefs on the north of the harbour and eastern channel.

The interior of Tongatabu is partly occupied by an irregular and shallow lagoon, which communicates with the sea on the north.

Regarding the island and the shallow tract to the north as a whole, we find an area whose circumference, represented by the convex border of the island on the south, and the shallow 9-fathom area, on which reefs have grown, to the north, stands at a higher level than the central part, represented by the lagoon and the 15-fathom basin.

In mentioning this island, Darwin pointed out* that "it resembles either an up-raised atoll, with one half originally imperfect, or one unequally elevated." The gaps in the line of reef along the northern margin show that the atoll was imperfect; but the gradual rise of the land towards the convex side, and the fact that it attains its highest point where it most nearly approaches the greatly elevated island of Eua, appear to point strongly to the conclusion that it has also been unequally elevated.

(134) The island is formed of coral limestone throughout, and in many places this rock lies at the surface. In the grassy roads of the town of Nukualofa one often meets with flat patches of coral, many feet in diameter, on which the lines of astreids or madrepores are seen radiating from a common centre. Elsewhere the rock is covered with a layer of reddish-brown clay, which in some cases attains many feet in thickness †.

The contour of Tongatabu is flat or presents gentle undulations,

* 'Coral Reefs,' 3rd ed. p. 177.

† A similar clay overlies the limestone formation of Vavau.

[Tongatabu]

but there are no streams or stream-channels on the surface. The rain soaks through the porous rock, and finds its way to the sea by underground channels excavated in the limestone. The caverns and subterranean galleries which have been thus hollowed out by the water are in some places very extensive, and in walking about the island one is often reminded of their presence by the hollow sound of one's footsteps.

Some remarkable features are presented by the narrow reef fringing the southern and eastern shores of Tongatabu. The land gradually slopes towards the ocean, and ends abruptly in a low cliff of coral rock. From the foot of the cliff there extends towards the sea a narrow reef-platform, whose outer edge is raised, forming a barrier* several feet in height. This barrier is in the position of the mound formed of nullipores which is commonly found near the seaward edge of a reef-platform†. It presents a steep surface towards the platform, and a vertical one towards the sea. In many places there is on the platform a depth of five feet or more of water, whose level is above that of the sea, and which is prevented from flowing away by the barrier on the seaward side. The upper surface of the barrier is formed of a number of shallow basins—the upper ones several feet in width—whose rims are perfectly level and which stand at different heights, the lower basins surrounding the upper, stage below stage, strongly recalling the structure which was presented by the well-known pink and white terraces of Lake Rotomahana in New Zealand. The outer part of the barrier is penetrated by fissures which open above by rounded apertures left between the margins of the basins.

The rollers, coming up from the open ocean, break against the steep face presented to them by the reef, and are thrown aloft in clouds of spray, while great jets and spouts of water are forced up through the fissures. The water falls into the basins on the barrier, streaming over their level edges along the whole of their circumference, to be caught by the basins beneath, and so down from basin to basin.

The edges and outer sides of the basins are covered with living nullipores, which grow in encrusting laminae, and flourish in the freshly aerated water which streams over them. Wherever the water flows, the nullipores grow; and thus the edges of the basins are kept level, and are constantly growing upwards and outwards.

It appears probable that such a barrier is a form of the nullipore mound. Its unusual height and the remarkable basin-like formation may be due to the steepness of the outer slope of the reef, causing the waves which break against it to be thrown upwards, and thus the water in which the nullipores flourish always falls on them from above.

The reef on the eastern shore of Eua presents similar features.

The little island of Eua-iki lying opposite the mouth of the eastern

* This term is used without any reference to a barrier-reef.

† The nullipore mound at Keeling Island is described in Darwin's 'Coral Reefs,' 3rd ed. pp. 13, 14.

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MR. J. J. LISTER ON THE GEOLOGY

(Tongatabu)

- 133 channel is composed of a higher central area, separated by a rapid descent from the lower peripheral part. It has evidently been elevated in two stages.

IV. CONCLUSION.

- 133 The view of the mode of formation of the Tonga atolls suggested
105 in Darwin's 'Coral Reefs,' is that they grew during a period of subsidence, when the volcanoes of the group were inactive, and that elevation has occurred simultaneously with a recent volcanic outbreak *. Dana also considers that the islands were formed during subsidence, and regards the elevation which has taken place as merely a local phenomenon †. The additional information on the group which we now possess appears to make a different view of the formation of these islands more probable. It is clear that elevation has been in progress for a long period, and has been renewed again and again after intervals during which reefs of considerable extent have grown; it has to a greater or less extent affected all the larger divisions of the group, while at Vavau and Eua reef-structures have been raised to heights of over 500 and 1000 feet.

Such an elevatory movement is quite in keeping with the presence of the line of volcanoes which traverses the group, and I am not aware that there is any evidence that these have, as a whole, passed through a quiescent stage previous to their activity in recent times.

With regard to atolls in general, one reason for considering them to have been formed during subsidence is the improbability of there being any other basis than a subsided island on which the reefs could have grown. In the Tonga Islands, however, the soundings of H.M.S. 'Egeria' show that Tongatabu and Nomuka rest on shallow banks, and where the underlying basis of the islands is exposed, as in the Nomuka group and at Eua, it is seen that they consist of layers of volcanic materials laid out under water. The process now going on at Falcon Island illustrates the way in which a volcanic mound, composed of soft material and originally standing above the sea, may be reduced to a submarine bank, and so form a basis for coral growth.

In consideration of these facts it appears probable that the atoll-shaped islands of the southern part of the Tonga Group have grown on banks of volcanic material laid out in shallow water, and that there is no necessity to call in the hypothesis of subsidence to account for their formation.

EXPLANATION OF PLATE XXIII.

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[114] Map of the Tonga Islands. The map of Eua is prepared partly from the survey of H.M.S. 'Egeria' (1888). The outlines of the patches of volcanic formation in the central part of the island are not accurately drawn.

* 'Coral Reefs,' 3rd ed. pp. 177, 186, 188.

† 'Origin of Coral Reefs and Islands,' Am. Journ. Sci. ser. 3, vol. xxx. (1883) p. 99.

[113]

96: Lister

OU9 Tonga OU9

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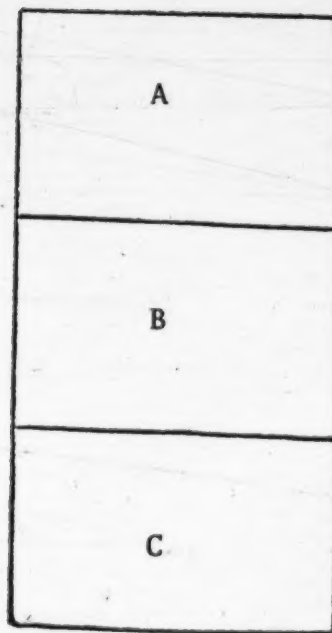
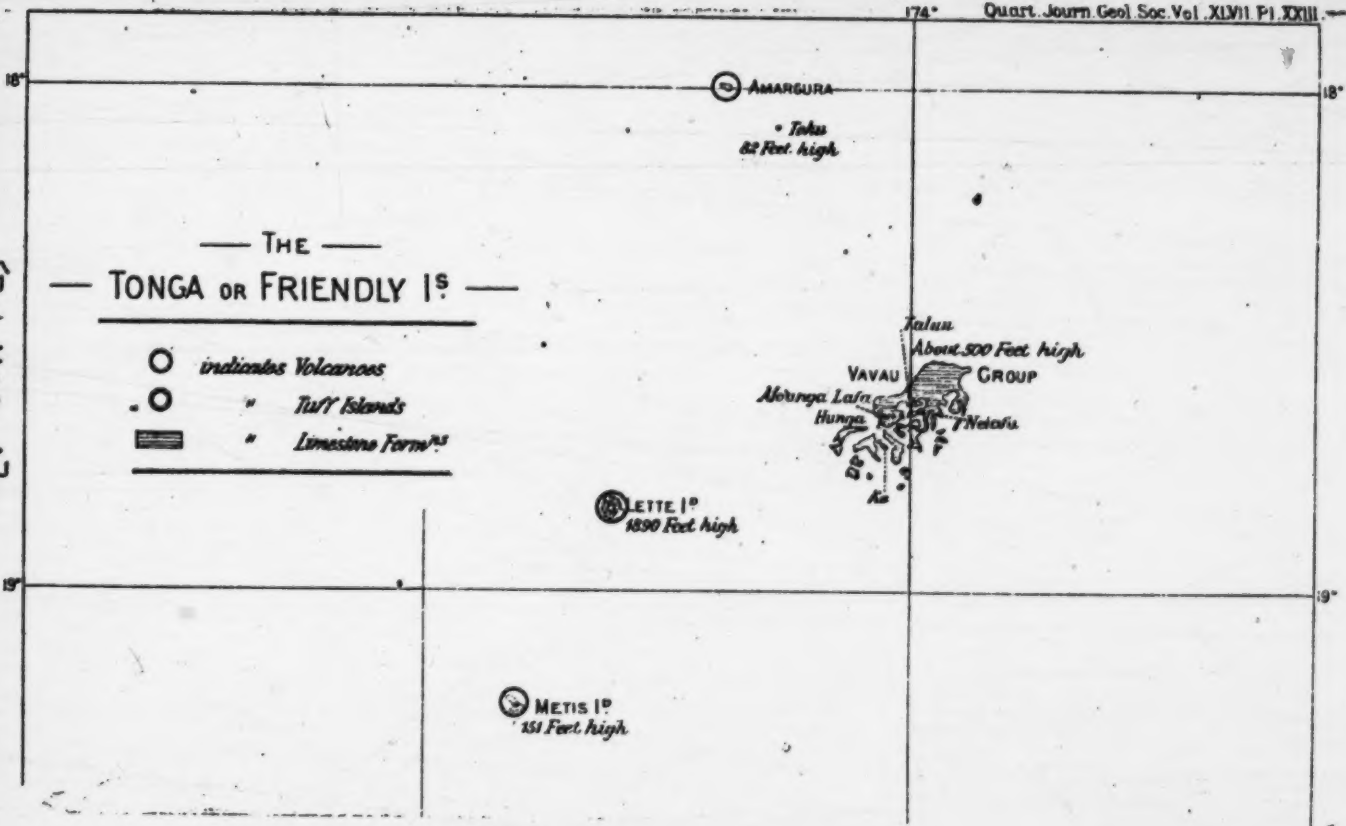


Chart of Positions of End Map [facing End Map]

96: Lister N-5 (1889-1890) 1891
009 Tonga 009

[End MAP, A]



102
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/11 cont./

- 131 Archipelago comprises 159 predominantly small islands scattered between approximately 15 degrees and 23 degrees latitude south and 173 degrees and 176 degrees longitude west. The entire land area amounts to approximately 696 square kilometers. (1)

(113)
(114)

1. = 268.9 square miles, according to the list in A. H. Wood, A History and Geography of Tonga /cited in English/, Auckland, 1945, p. 109; as yet, completely reliable information does not seem to exist; however, the area of 997 square kilometers quoted by W. Geisler (Allgemeine Landerkunde von Australien und Ozeanien /General geography of Australia and Oceania/, Hannover 1931, p. 21) is probably too high.

The largest of the 36 inhabited Tonga Islands are Tongatapu (2)

(194)
(656)

2. The new spelling in Tonga, determined by government ordinance, definitively uses p for the sound midway between p and b; the spoken sound ng is now also written out (Formerly it was simply g). "Tonga Government Gazette" /cited in English/, March 31, 1943).

with approximately 256 square kilometers and Vava'u with approximately 89 square kilometers. (3)

3. Wood, loc. cit. p. 96, 99.2 square miles for Tongatapu; p. 104, 34.6 square miles for 'Uta Vava'u.

133

The inhabited islands of the Archipelago, which is partly of volcanic, partly of coral origin, and extends mainly in a north-northeast, south-southwest direction, are mostly coral limestone formations and were formed through the elevation of atolls or barrier reefs. Geographically and administratively they are divided into the three main groups of Tongatapu (in the south) with the "capital city" of Nuku'alofa, Ha'apai (in the center) with the main harbor Pangai on Lifuka, and Vava'u (in the north) with the main harbor of Neiafu; far to the north lie Niua Fo'ou (evacuated in December 1946 because of a

101
504
731

/11 cont./

101
[504]
[731] volcanic eruption) and Niua Toputapu (with Tafahi). 'Ata, the southernmost island of the Archipelago, was evacuated shortly after 1861. (4)

4. Following the visit of a Peruvian slave ship.

132 The climate of the Tonga Archipelago, especially as regards the main group of Tongatapu, may be called more subtropical than tropical. (The difference with Samoa, for example, is considerable.) For the tropics it is an agreeable climate. Naturally, there is a difference between the northern and the southern islands of the extended Archipelago. Generally speaking, the maximum temperature lies between approximately 27 to 32 degrees Celsius; the mean temperature amounts to approximately 21 to 27 degrees Celsius. There is no sharp, regular seasonal change, so that one can scarcely speak of a "rainy season" and a "dry season." Rain may fall in every month. The division summer/winter is, however, justified, for heavier rains /12/ occur more often in the months from December to April (summer), along with higher temperatures and shifting, often easterly winds. In these months hurricanes may also occur. Lower temperatures (often with rather cool nights, especially on Tongatapu), along with usually lighter rainfall, or absence of rainfall for months and prevailing east-southeast (southeast) trade winds, are observed most years from May to November. Sometimes persistent droughts occur in the months of October to December.

133 Earthquakes are quite frequent, but generally so slight that they do not cause particular damage.

134 The Tonga Islands are relatively fertile (aside from soil depletion occurring on several densely populated islands). Vegetation is in general luxuriant. The inhabited and several of the uninhabited islands are almost completely covered with more or less well-tended plantings of the natives, save for the strips of bush around the edge

/24 cont./

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[133]

[484]

29. Even the fertile island of "Eua which is the only Tongan island with running water and lies close to Tongatapu has had an astonishingly sparse population until recent times. In part the reason is said to be the often difficult crossing between Tongatapu and "eua because of the frequent strong surf, people shrink from such discomforts.

Gregariousness was (30)

30. For example, Cook, loc. cit p. 289.

and still is a further outstanding trait of the Tongan. The natives of both sexes prefer working together whenever they can arrange it. In every village there are cooperative pools (kautaha) in which the women plait mats and make lengths of tapa and in which the men carry out larger plantation work. In addition they unite in single undertakings of various kinds (for example, fishing, house building), and most men form evening kawa gatherings in the village where they discuss the day's happenings, plans for the future and events of the past, sometimes until daybreak.--In sociability the Tongan comes to life, and amid talk, fun and laughter the work progresses better.

In the course of European influence and cultural change this gregarious impulse has been considerably furthered by the fact that individual settlements united into villages, (31)

31. The village settlement in Tonga and with it the separation of place of residence and plantation goes back to the civil wars and the influence of missions. See chapter on settlement and community, p. 134 ff.

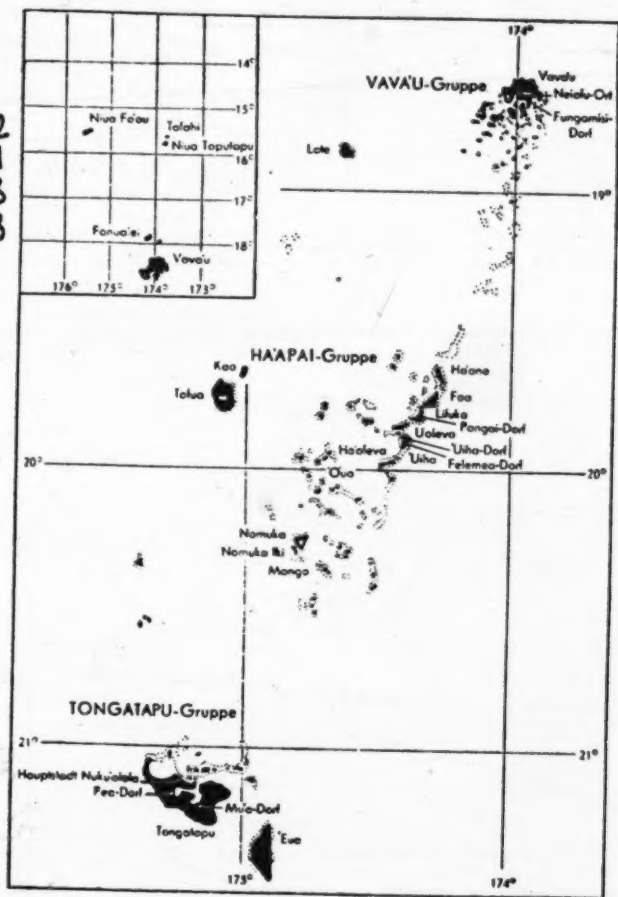
new ties in church groups arose, and the dependence of the masses on their chiefs greatly diminished.

The old controversy as to whether the Tongan should be called lazy or industrious can be answered, on the basis of present findings, by saying that he is neither lazy nor industrious by Central European standards. On these relatively fertile islands that have no drastic

100: Kochi--507 E-4,5 (1951-1952) 1955 OUG Tonga OUG

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/map/

100: Koch--S08

E-4,5

(1951-1952) 1955

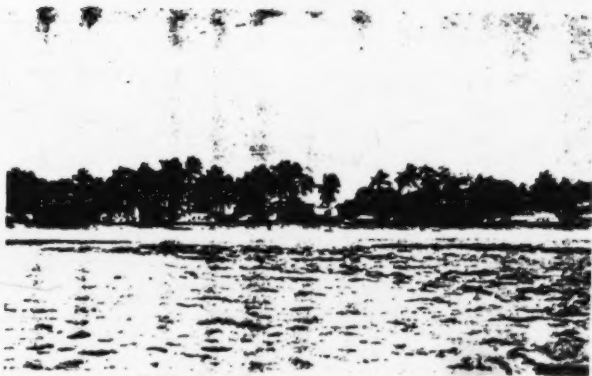
OU9 Tonga OU9

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1. Young Tongan /male/

133



2. Southwest shore of Nomuka Island

[End Plate I]

166 maldistribution of resident population, with over 50 percent now
162 living on Tongatapu. This situation is compounded by the decreas-
244 ing use of arable farmland and a subsequent reduction in the produc-
178 tion of indigenous foodstuffs (Fox 1972, p. 5).

311 Several Tongan geographic features are influential in the
distribution of the Tongan population. The western chain of islands
● [133] in the Tongan group are volcanic and therefore have been settled
only intermittently. These islands, usually smaller in size, are
less densely settled than the eastern coral islands. Factors, such
as the lack of permanent fresh water, and land too steep for anything
beyond scattered cultivation, severely limit their settlement poten-

[133] tial. In addition, occasional volcanic eruptions further deter
settlement. During the civil war period of Tongan history, most of
the western chain islands supported sizable populations. However,
only Niuafo'ou and Niuatoputapu continued to support communities
into the twentieth century (Walsh 1970, p. 30). A volcanic eruption
311 on Niuafo'ou in 1946 forced its evacuation and most of the village
166 population from this island resettled on 'Eua. (Niuafo'ou was
[133] resettled in 1958.) Recent attempts to settle Kao and Tofua in
Ha'apai have met with varied success. Only Tofua appears, at
present, able to sustain a reasonable population. However, plans
and proposals are occasionally presented for the permanent settle-
ment of Late and Koa, also in Ha'apai.

161 The concentration of Tongan population within towns and
162 villages is expected to continue to be a significant feature of
166 Tongan population distribution. Similarly, a growth in the number

311 recognize that the uninhabited land is available, but continue by stating, "We have enough land."

311 Although Ha'apai and Vava'u include areas of low density
161 population, the majority of this land is located on Tongatapu, also the scene of in-migration, population maldistribution and crowding.

311 While totally uninhabited areas on Tongatapu are few, there are
161 several areas of extremely low density, most often held by the nobility and located within the eastern and southeastern districts.

423
565 The total amount of land held or controlled by Tongan nobility and/or royalty is unpublished (Rogers 1969, p. 217), and estimates vary
000 from less than 50 percent to 70 percent. However, it is anticipated that population pressure, building throughout the Kingdom and particularly on Tongatapu, will necessitate the end of such land hoarding.

311 Natural factors may also contribute to the low density of a
161 particular area. Maude's assumption of a balance of "land and sea resources" would seem to be the major cause. Though growing population pressure may necessitate a reordering of this concept, at present it appears that a scarcity of seafood correlates highly with low population density on adjacent land areas. This is particularly noticeable in the smaller islands of Eastern Ha'apai, and in areas
● [133] of Vava'u. However, the situation in Vava'u is compounded by the inaccessibility of existing resources, owing to reefs and rocky shorelines.

On the other hand, densities which are highest, excluding urban areas, are located within areas where reefs provide an

APPENDIX A

GEOGRAPHICAL SURVEY OF TONGA

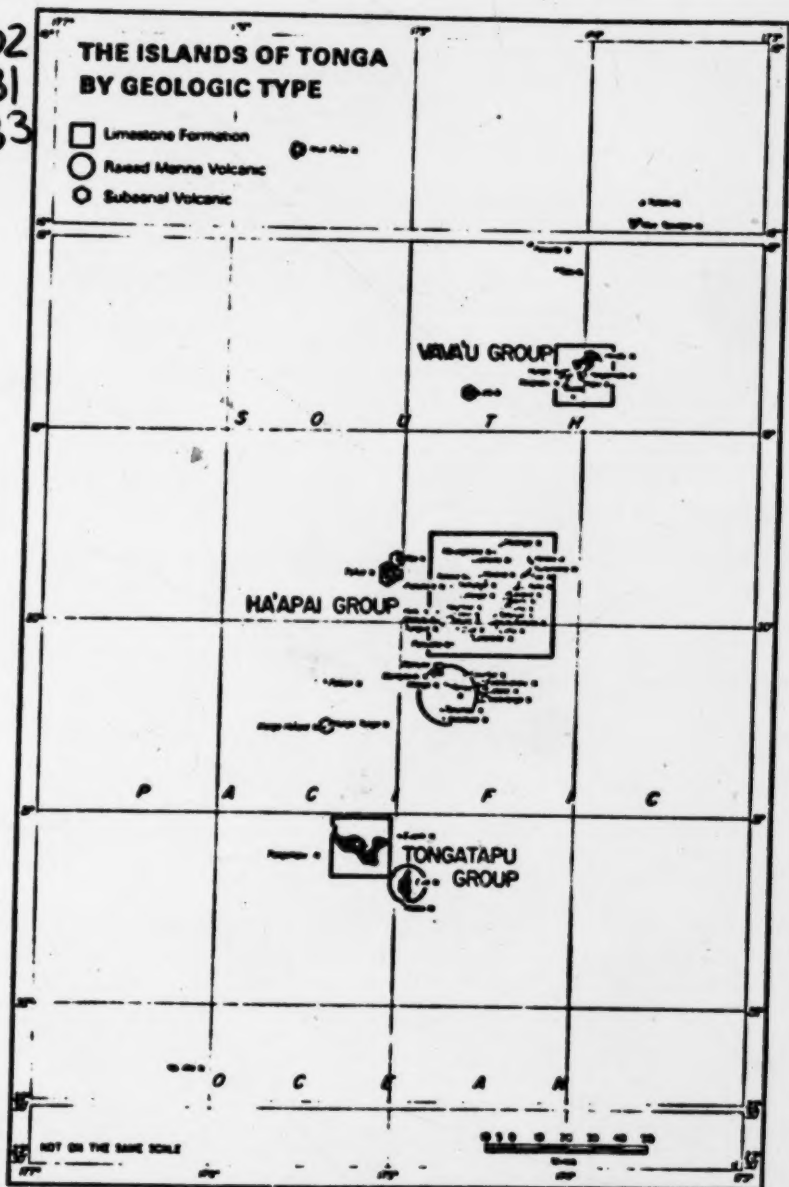
131 The islands comprising the Kingdom of Tonga are scattered through 8°30' of latitude, from 15° South to 23°30' South, and 4° of longitude, from 173° West to 177° West. Directionally, the Kingdom is located East of Fiji and South of Samoa (Harris 1966, p. 124). The total area encompassed by the Kingdom is over 20,000 square miles. However, of this area only 288 square miles are land and this amount is scattered over 150 islets of which only 45 are inhabited (Kennedy 1968, p. 22). The largest and most populated island of the Kingdom is Tongatapu which accounts for 99 square miles and holds a population in excess of 50,000. Estimates of Tonga's total population vary from 80,000 to 100,000. However, sources within the nation give the total as of January 1, 1975, as 95,000 (Report of the Ministry of Health 1973, p. 26).

133 The islands of Tonga lie in two fairly parallel lines and are actually the tops of two undersea mountain ridges. The basic orientation is Northeast to Southwest with several notable outliers in the Northwest of the Kingdom's territorial limits. These outliers include the islands of Niuaotoputapu and Niuafo'ou (Kennedy 1968, p. 22).

Physically, the geography of the islands is not uniform. There are three divisions of islands by geologic type (Figure 3).

101: Clark K-4,5 (1974) 1978 OUG Tonga OUG

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133

1. Subaerial volcanic islands, formed above the sea by volcanic action.
2. Raised marine volcanic islands formed beneath the sea and elevated, composed of both volcanic material and limestone.
3. Islands formed entirely from limestone.

The volcanic islands to the west form a line extending Northeast to Southwest, approximately parallel to the long axis of the group. Raised marine volcanic islands are found in the Southern Ha'apai group and the island of 'Eua. Limestone islands comprise Tongatapu, the Vava'u group and the Northern Ha'apai islands. The material of this latter group is entirely of coral origin which seems to have been formed by the elevation of the various atolls through geologic history (Pacific Islands, Vol. III, 1944, pp. 15-21).

[73]

The islands have experienced volcanic activities in historic time which, while not always severely damaging, have caused evacuation of some islands. It is also significant to note this activity

[134]

has contributed to the soil fertility of the islands adjacent to an eruption through the spreading of volcanic ash over the area. The majority of this activity is found in the western chain of islands away from the mainstream of Tongan life located on the coral limestone islands to the east (Pacific Islands, Vol. III, 1944, pp. 15-21).

131

Geographically, the islands of Tonga are found in three distinct groups spread along a 500 mile North-to-South axis (Figure 4A). These groups are: Vava'u to the Northeast, the central islands of Ha'apai, and Tongatapu to the Southwest. The

VI.—*Brief Geographical Sketch of the Friendly Islands, with an Account of the Visit of H.M.S. Meander, Captain the Hon. Henry Keppel, to the Island of Tongatabu, June, 1850.* By O. W. BRIERLY, Esq., F.R.G.S.

Read December 8, 1851.

THE *Friendly Islands*.—The Friendly or Tonga Islands consist of three separate groups, and are situate in the Pacific, between 18° and 23° S. latitude, and 173° and 176° W. longitude. 131

There are said to be in all more than 150 islands; 15 of which rise to a considerable height, 35 are moderately elevated, and the rest are low. 133

The most southern group (the Tongatabu Islands) was discovered by Tasman in 1643. The Island of Tongatabu is the largest of these, and is about 20 miles long by 10 wide at its broadest part. The general surface of the island, with the exception of a few hillocks varying from 30 to 40 feet in height, is nearly a dead level; the highest part of the island is a small mount about 60 feet above the level of the sea on the northern side. 175

The Central, or Haabai Group, is composed of a considerable number of small islands, the most populous being Lifuka, about 8 or 9 miles long by 4 broad. The islands of this group are very fertile, some of them are low, others are of considerable height, and among the latter are Tofua and Kao. Tofua has an active volcano.

The Vavau Islands form the most northern group, and are somewhat larger and higher than the Haabai Islands. Vavau is a fine island, about 36 miles in circumference; its surface is uneven, and on the northern side it rises to considerable elevation.

The climate of the Friendly Islands is humid, and the heat rather oppressive, rising frequently to 98° in the shade. Much rain falls periodically. The trade winds are not constant, and westerly winds occasionally blow in every season. 132

Very heavy dews fall at night, and the transitions from heat to cold are very sudden. Hurricanes are frequent, scarcely a season passing without them. The months of February and March are those in which they occur, but they have been known to take place in November and December.

The storms begin at N.W., going round to the E., and ending in S.E.; the wind continues to increase until it becomes a hurricane, and is frequently observed to change almost immediately from one point to the opposite. In the same group of islands trees have fallen during one gale, some to the S. and others to the N. Earthquakes are also frequent. 133

an Account of a Visit to the Island of Tongatabu. 99

tacked to meet her. ^A It was about 15 feet in length, without any carving or ornament, and having a single outrigger. There were 501
four natives in it, all naked with the exception of a little tappa, or 505
native cloth, wrapped round the waist, and reaching down to the 291
knee. They came out against a heavy swell, often dashing right
through the crests of the waves, which at times broke completely
over them. They were talking to each other with great rapidity
and animation as they approached, and, as we looked at them, not 123
at all expecting to hear anything we should understand, one of 505
them hailed us in perfectly good English, "Square the main 191
yard!" As this had been already done some short time before
to allow the canoe to come up with us, this speech was no
doubt intended to show us how well he could speak English. A 505
rope being thrown over, one of them scrambled up the side, the
canoe pushing off again with the rest. The native who came on 142
board was a fine man about six feet in height, with really handsome
features, and a fine open expression that was quite prepossessing.
He was tattooed upon the breast and across the back of one hand, 304
and had lost one of his fingers. When he came on deck he an-
nounced himself as a pilot, asked whether we were English or 502
French, and then pointed out the passage through the reefs to
the anchorage, watching the ship, and saying "very good," as she
came up to her course, and then, going forward, took up his station
on the bowsprit. The entrance to the anchorage is between a 502
mass of coral reefs and islets on the northern side of the island, and 133
is very narrow, but our native pilot showed the greatest coolness
and judgment in conducting us through it. Within the entrance 133
the anchorage spreads out into a bay with deep water right up to
the reef which skirts the shore.

Owing to the want of high ground there is nothing very striking 368
in the appearance of the island, which from the sea forms a conti-
nuous line of palms rising over a beach of coral, the highest part
being the small mount opposite the anchorage at Nu-ku-alófa, on
which stands the native church and a small stone, marking the
grave of Captain Croker, of H.M.S. "Favourite," who was killed
at Béa, in the island, in 1840. Upon the beach were some very 361
large sheds, and many pretty huts enclosed by neatly made fences.

When we had anchored, a whole fleet of small canoes, bringing 505
crowds of natives, came off to the ship. In the afternoon a party
was made up to go on shore. At the landing-place we were met 123
by a large troop, principally children and young women, with two 411
or three young men, one of whom carried a bayonet fixed upon
the end of a pole. The women were dressed in short jackets of 291
coloured cotton, with sleeves reaching down to the elbows, and
petticoats of tappa fastened round the waist. As we were going 797
away to look for the houses of the missionaries, a native came

110 Mr. BRIERLY's *Sketch of the Friendly Islands, with*

562 One of the most re-
562 markable things in connexion with the Tonga Islands is the
565 respect and consideration in which the women are held. They
have female chiefs; and if a woman of the higher class marry any
one beneath her, she still retains her superior rank.

133 The coral reef at Nu-ku-alófa forms a belt along the shore,
varying from 50 to 150 yards in width, deepening suddenly
so that a large vessel at low water might lie close alongside
it like a wharf. Over this coral flat we had always to walk upon
landing, the depth of water upon the crumbling coral varying
from ankle to knee-deep, with occasional holes in which one might
suddenly find himself up to the neck. After our first visit we
always went prepared for any depth.

643 At 4 o'clock King George, accompanied by the missionaries,
609 Messrs. Lawry, Amos, and Daniells, came off to the ship. His
Majesty now wore a clean white shirt, with the usual tappa petti-
[292] coat fastened round the waist and hanging down to the feet. He
was received at the gangway by Captain Keppel and officers with
a guard of honour, and was then taken below to the captain's cabin.
Here he looked with great attention at the pictures hanging round,
particularly at some hunting scenes; and being shown a coloured
panoramic sketch which I had made at Cape York, with canoes and
Torres Straits natives in the foreground, he looked at it very atten-
tively, inquiring where they belonged to, and asking several other
questions about them. In the dining cabin he examined with
great interest the engraving of the Queen after Winterhalter.
[264] At dinner his manner was composed and dignified: he took soup,
[157] and used a knife and fork with perfect ease, taking wine with Cap-
tain Keppel and the rest at table, preferring champagne to any
[262] other, but drinking very moderately. When asked if he would
take some wild-duck (which had been shot at the lagoon in the
island), he replied, "No, that is Tonga, I can always get that,"
and, looking towards a leg of mutton, added, "I will take some
sheep." He inquired the rank of the different officers who were
at table, and observing a midshipman amongst them, he asked
[262] "Why that boy was there?" As he was helping himself when the
cheese came round, one of the missionaries interrupted him rather
hurriedly, telling him that he thought he would not like it; to which
he replied quietly, "If I do not, I can wash it down with water."
[157] The most perfect composure of manner marked all his actions, and
formed one of the most striking features in his character. At
dessert, several glasses, containing different kinds of wine, were
placed before him, in order that he might choose which he liked
best. Captain Keppel observed at the same time that there were
other light French wines if he preferred them, at which he shook
his head, and said, with an animated expression in broken English,
"I do not like French." Upon his health being drunk, and the

an Account of a Visit to the Island of Tongatabu. 117

own people, and finds sufficient employment in attending to his duties as King without meddling in trade. He is one of the best sailors among the Tongaese, and has frequently shown remarkable coolness and presence of mind in situations of danger. When we were at Tongatabu he was about to build a jetty over the reef at the anchorage. He does not smoke, and his example is generally followed by his people, smoking being considered as a mark of dissipation. At one time, however, it prevailed to a great extent, nearly every man and woman, and even many children, smoking whenever they could get tobacco. The use of it is discouraged by the missionaries, but I imagine that some of the natives still secretly indulge in it, for while I was sketching one day a young woman came up to me, and, first looking cautiously around, inquired in a confidential whisper if I had any tobacco, at the same time showing me a short black pipe.

Canoes.—The model exhibited will serve to show the construction of these better than any description. They are steered with a large paddle on the lee quarter, and it will be seen that the lower part or foot of the sail is secured to a spar in the same manner as the sails of the "America" yacht. King George's canoe is 90 feet long, the sail being 90 feet high and 60 feet wide at the top. These large double canoes will carry as many as 200 men.

In 1847 King George, fearing that the French might interfere with him, wrote a letter to the governor of New Zealand, requesting that he might with his people be received as subjects of the British crown.

I would venture to remark that it must be of advantage to cultivate friendly relations with the inhabitants of all such islands as are desirous of being connected with us, more especially as it may be very desirable to form depôts for our steamers at some of the islands. It has been exceedingly difficult for me to draw a line between the geographical and the ethnological in this paper, as they are so intimately connected; but I trust by this simple narration, illustrated by the pencil, that many, who would have no taste for a voyage of 12,000 or 15,000 miles, will in some measure realize the condition of our antipodean fellow men; and it is to be hoped that in a comparatively few years the connexion existing between our Australian colonies and the mother country may also include these beautiful and fertile islands.

Sailing Directions for entering Tongatabu.

HAVING NO map of Tongatabu, or any knowledge of the place, we were in doubt as to which was the proper entrance to the anchorage, and the following sailing directions were afterwards kindly given me by Mr. May, master of the *Meander*, as the result of his observation upon going in.

When the northern point of Eua bears S., steer direct for the small island of Eua Eki, on nearing which several small islets will be observed immediately to the

118 Mr. PETERMANN's *Notes on the Distribution of*

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133
[502] northward and westward of it, and the eastern point of Tongatabu will then be clearly seen, and cannot be mistaken. Abreast of Eua Eki we picked up a native pilot, and bore up for the opening between that island and the E. point of Tongatabu, which is the entrance to the anchorage on the northern side of the island.

133 No stranger should take this passage without a pilot; and at first sight it appears almost impossible to take a ship through the different windings between the coral reefs.

In running up you have the shore of Tongatabu on the left hand, and a number of small wooded islets on the right; all the shores being edged with coral reefs, which are generally breaking, and for the most part dry at low water. About halfway through the channel there is an awkward turn, with two sunken rocks in the centre, contracting the channel to less than a cable's length, steep until you pass to the westward of these rocks. With the exception of this turn, the channel is of good width, and within the passage it spreads out into an apparently clear, broad sheet of water, edged on the outside by small islets.

The Meander ran in and anchored within 400 yards of the edge of the flat reef which runs off the shore, just abreast of the church, in 17 fathoms water; sandy bottom. There are no high leading marks for the passage; but from the bowsprit-end or fore-yard all the dangers may be seen. With the danger from sunken rocks, no ship could work through the turns; and the passage should never be attempted without a commanding fair wind, the tide setting in different directions over and between the coral reefs.

000 VII.—*Notes on the Distribution of Animals available as Food in the Arctic Regions.* By AUGUSTUS PETERMANN, Esq., F.R.G.S., &c.

Read Feb. 9, 1852.

THE occurrence of animals in the Arctic Regions, and its bearing on the missing expedition under Sir John Franklin, is a subject which has of late excited a good deal of interest, and has given rise to the most conflicting and contradictory opinions: some maintaining the existence of animals in the Arctic regions in great numbers, affording abundance of food to man; others as stoutly insisting upon the extreme scarcity, if not total absence, of them.

On entering, however, into an analysis of all that has been said and written on this point, it appears that a too confined view has been generally taken of the subject. Individual observations in certain localities have been separately considered and reasoned upon for the entire region, and these localities only related to a comparatively small space on the American side, the whole Asiatic side of the Polar basin not being taken into account at all. Again, it has been commonly assumed that with ascending latitudes temperature descended, and animal and vegetable life decreased, attaining their minima at the Pole. Nothing could be more fallacious than such an hypothesis in a region where the temperature corresponds less with latitude than in any other part of the globe. When, therefore, the shores and waters of Wellington Channel were found to be "teeming with animal life," it was regarded as a wonderful fact that more animals should be found in that region than in those to